AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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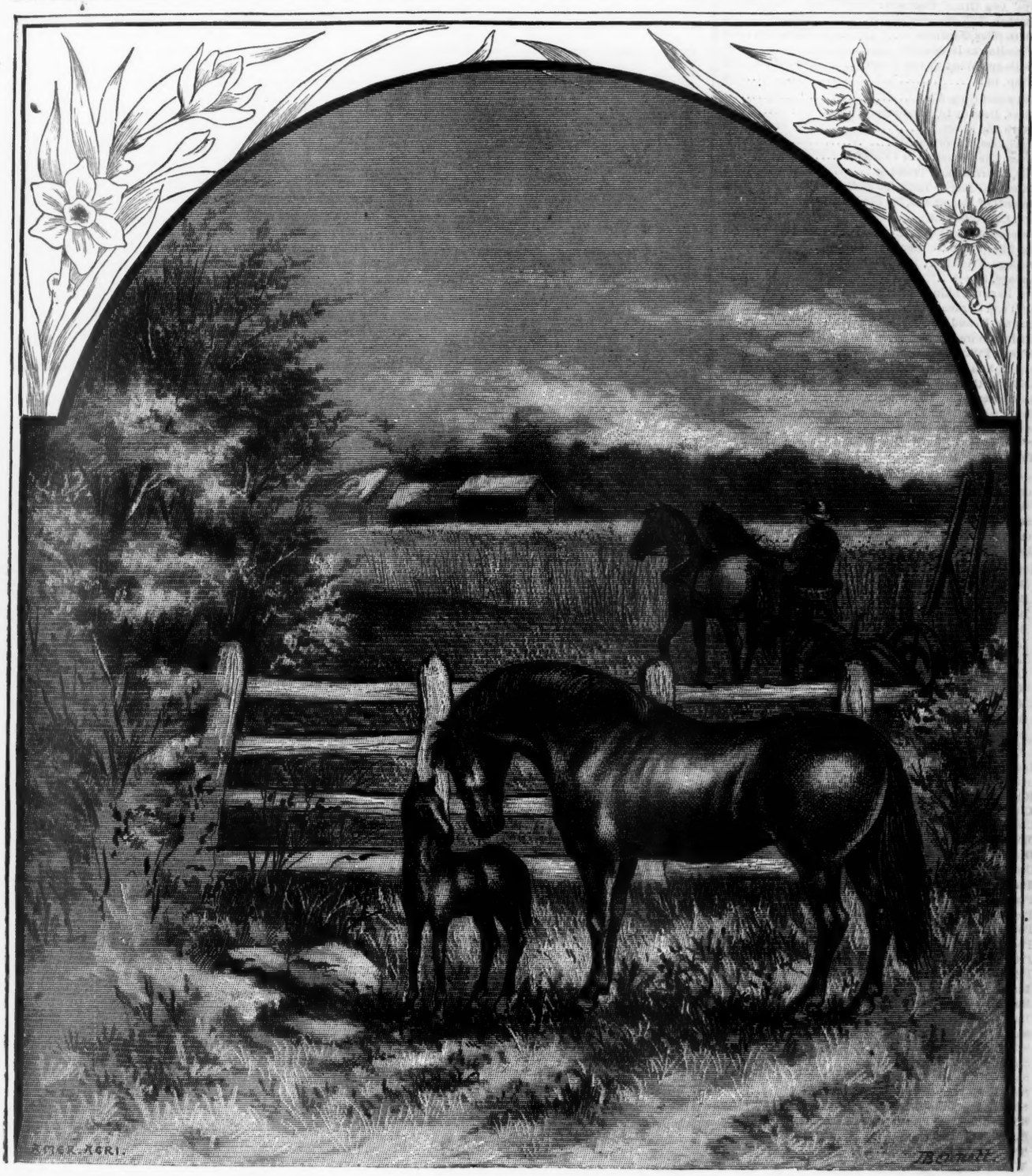

It is the fairest sight in Nature's realms,
To see on summer morning, dewy-sweet,
That very type of freshness, the green wheat,
Surging through shadows of the hedge-row elms.

CHARLES TURNER.

Drawn and Engraved for the American Agriculturist.

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Contents of this Number.

Animal Ailments....287
Animals, Kindness to....276
Asparagus, from Seed....278
Basil, The Sweet....*Illustrated*..294
Basket Items....286-287
Bee Notes for July....275
Bees, Fruit Blossoms and the....*Illustrated*..294
Beetle, The Goldsmith....*Illustrated*..275

BOYS' AND GIRLS' COLUMNS:
Baobab, The Wonderful....*Illustrated*..298
Butterflies, Japanese....*Illustrated*..300
Fish-Hawks in Council....300
Galls and What Causes Them....3 *Illustrations*..300
Trap, In a....299

Buckwheat Crop, The....275
Calves, Rearing to Advantage....278
Cistern and Filter....*Illustrated*..293
Cleanliness, Importance of....292
Clover, The Carnation or Crimson....*Illustrated*..295
Colts, Breaking and Training....2 *Illustrations*..281
Contents of Box or Tank, To Find in Gallons....295
Contents of Box or Bin, To Find in Bushels....289
Corn, Cultivation of....280
Disinfectants and their Uses.—Food Preservatives..291
Dog, Sheep, The Old English Bobtail....*Illustrated*..289
Ensilage, Primitive; Sour Fodder....289
Ensilage, Sweet....292
Ewe, For an Unkind....290
Farm and Garden Work for July....*Illustrated*..274
Fencing, In and Out....279
Fencing, Wire....2 *Illustrations*..288
Fernery, Filling and Taking Care of a....278
Fertilization, Recurring....280
Field Sports, Laws Affecting....284
Fishes, Reasoning Power of....275
Flower Garden and Lawn....275
Garden, A Wild or Native....295
Greenhouse and Window Plants....275
Hay, Cutting Meadows for....288
Hay, To Find Number of Tons in Load or Stack....291
Horse, How to Tie a, To a Post....*Illustrated*..276
Horse, Arab, In England....292
Horses, Care of Work....278
House, A Country, Costing $3,500....3 *Illustrations*..283
House, Poultry, A Novel....2 *Illustrations*..276

HOUSEHOLD:
Baby's Slumber Robe....*Illustrated*..297
Bathing....296
Blue Monday....297
Box to Hold Hair Pins....*Illustrated*..297
Lamp Mat, A Pretty....*Illustrated*..296
Lamp Shade, A Handsome....*Illustrated*..296
Lemon Ice Cream without Cream....297
Recipes, Some Good....296
Rug, A Home-made....*Illustrated*..297
Summer Millinery....297
Splasher, for the Wall....*Illustrated*..296
Wall Pockets, Handy....*Illustrated*..296

Incubators, Home-made....283
Irrigation, Town Sewage and....284
Kitchen and Market Garden....274
Lime, Uses of....284
Live Stock Notes for July....274
Meat, Exportation of Dead....290
Onions, Enemies to Growers....2 *Illustrations*..280
Orchard and Fruit Garden for July....274
Pastures, Improvement of....278
Plants, Home; The Oleander....2 *Illustrations*..295
Poultry, Chicken Business, The....277
Poultry, Layers, Non-Sitting....277
Pourpier Vert....*Illustrated*..295
Prairie Farm, Plotting out the....290
Primroses, The Evening....2 *Illustrations*..294
Rake, A New Garden....*Illustrated*..280
Root House and Barn....3 *Illustrations*..289
Rust, To Prevent....291
Salt, For Pasturing Stock....280
Silo, To Build a Cheap....288
Sheep, Negretti Merino....*Illustrated*..285
Sheep, Racks and Troughs for Feeding, 4 *Illustrations*..288
Soil, Keep the, Occupied....294
Sowing Early Crops Late....293
Swine Diseases, Preventing....285
Swine, Poland China....2 *Illustrations*..291
Tools, Take Care of the....279
Useful Helps for Farmers....6 *Illustrations*..276
Wagons of the World....3 *Illustrations*..293
Walks and Talks on the Farm....282
Water Barrel its Own Truck....*Illustrated*..293
Yellowstone Falls, My Visit to the....*Illustrated*..279

See page 301 and onward for other valuable articles not included in this Index, Sundry Humbugs, etc., etc., etc.

July.

Through all the long midsummer day
The meadow sides are sweet with hay;
I seek the coolest sheltered seat
Just where the field and forest meet.

J. G. WHITTIER.

FARM AND GARDEN WORK FOR JULY.

Our hot sun and dry weather ripen grain and grass—or at least bring it forward so that it is ready for the scythe and the sickle, much earlier in the season than in the climate of Europe. July is really the first, and perhaps the most important harvest month. The great grass crop, with which "the early and latter rains" has blessed millions of acres, is to be cut, cured and harvested. Winter grain, over a great part of the country, is to be cut this month, while, at the same time, when from any cause, short crops are anticipated or are to be provided against, it is even now not too late to get in a crop of millet or of fodder corn.

It is well to bear in mind that the most and best fodder which can be raised on the farm, when there is likely to be a short hay crop, is fodder corn. Either large-growing sweet varieties, or the Southern white dent are most satisfactory. It is best to sow late in order that it may be in condition to cut either for curing dry or putting into silos just before frost, for in the season of long, cool nights it is less liable to heat. If cut up early it will not cure well, and if it stands too long it will be hurt by frost. Sown the last of June it comes about right.

All readers turn immediately to p. 308 for matters of special interest.

July is seed time for plants of the turnip kind. There are, indeed, cold, heavy soils, where Swedes need to be sown in June to make a crop, but generally the former half of this month is early enough, while for those known as English turnips, if sown the latter half, and up to the tenth of August, they will give good returns.

There are weedy fields that really need to be thoroughly summer-fallowed before anything is done with them. In these the plow must be kept going, and in light lands the weeds are destroyed at a sacrifice of nearly all the organic matter, which must be kept replaced in some way. Hence, it is almost always better to fallow with a root crop, sowing in drills and giving thorough culture. The fertilizer containing no weed seed, the cleaning of the land may be very complete, and the soil will be improved in fertility.

Live Stock Notes.

The midsummer season is not a trying one to live stock, except in times of protracted drouth. Water must be provided, but the quantity need not be great, and where it is low or has to be hauled, animals, except milch cows, should be limited as to quantity. Milch cows should have corn-fodder cut up and fed green daily, if it is an object to keep up the flow of milk during drouths. This is also useful for mares with foals running at pasture, and a moderate quantity of grain and bran is always useful for milk-giving stock. Lambs will probably need to be weaned this month; watch the ewes, and draw the milk from all full udders every second or third day; give the lambs a handful or two of oats or bran daily. Tar the noses of all sheep to keep off the fly, and watch the feet for any indication of foot-rot. If suspected, clean out and dress with a solution of blue vitriol or carbolic acid.

Orchard and Fruit Garden.

Newly planted trees usually have a struggle for existence this month. It will be wise to mulch these before dry weather begins. The object of a mulch is to prevent evaporation of moisture from the soil, hence litter of any kind, chip-dirt or even stones, will answer. If the surface of the soil of the orchard can be frequently stirred, and kept light, this will answer the same purpose as mulching....Early varieties of apples and pears keep but a short time after they are gathered, and are readily bruised. If assorted and properly packed in crates they are often more profitable than later kinds....The greater the distance from market, the harder should peaches be when gathered. The fruit should still be firm when it reaches the market....If strawberries are in rows, remove the mulch, cut off the runners, and give a dressing of fine manure or some good fertilizer; pull up any weeds that are in the rows, and return the mulch to keep down weeds. If the soil can be kept cultivated, the mulch need not be returned until cold weather. As soon as pot-layered plants are well established, set them out; continue to layer them. Thinning the fruit to the extent of one-third or one-half will pay with choice apples and pears....Blight attacks without warning; cut away the branch, or tree, as the case may be, and burn....One of the most troublesome insects in hot weather, is the so-called Red Spider of the greenhouses. It is especially bad upon pear trees, causing the foliage to turn brown. Syringe with soft soap suds, stirring a little kerosene into the soap before adding the water....Cut out old raspberry canes as soon as the fruit is off; allow only as many new shoots to grow as are needed for fruiting....Pinch blackberry canes when six feet high and their branches when eighteen inches long....Mildew will attack the grape-vines in hot, close weather; apply sulphur, using a bellows, on its first appearance. (See the sulphate of copper and lime remedy given some months ago.) The grape insects at this season are mostly large and may be hand-picked.

Kitchen and Market Garden.

Next year's crop of asparagus will depend upon a vigorous growth of tops this summer; do not allow them to be cut away....Plant bush beans for succession. When Limas reach the tops of the poles, pinch off the ends....Continue to sow early kinds of beets for late use and for greens....Set out late cabbages and cauliflowers as soon as the plants are large enough....Celery should now be planted; make well-manured rows three feet apart, plowing out furrows, manuring them, and turning back the soil; roll and harrow until the surface is fine, and set out the plants six inches apart....Continue to sow early kinds of sweet corn....If cucumber seeds are to be saved, mark the earliest and finest specimens before any are cut for use. To prolong the bearing, cut away all of proper size, whether needed for use or not. Sow seeds for pickles....Melons and watermelons are beset by various enemies, none worse than the two-legged pest found everywhere not far from villages and towns; secure a stringent trespass law and enforce it....Onions, as a rule, pay best when sold half-grown or more and still green; wash and remove any loose skin, and tie in bunches of three

to six, according to size....If the vines of late squashes take root at the joints, do not disturb them. Continue to hand-pick and crush the eggs of the squash-bug. Squashes of late kinds that set too late to ripen, should be used for the table; they are superior to any early kinds....Sweet herbs may be transplanted to vacant places not needed for other crops....Keep the ridges on which sweet potatoes are growing free from weeds. When the vines begin to run, do not allow them to take root; lift them occasionally....If the tomato rot appears, cut away and burn all affected fruit as soon as a spot appears....Sow turnips of the Ruta-baga sorts the first of the month. The "Long White French" is superior to all others for the table.... Weeds, now and all the time, demand attention. If a crop is off, and the ground is not wanted for another, sow it to field peas or other crop, to keep down weeds and to be plowed under before frost.

Flower Garden and Lawn.

In hot weather the grass will grow but slowly, and the frequency of the mowing should be governed by the length of the grass....The principal work is keeping in order. Take out all large weeds that appear on the lawn; keep margins of beds and walks neatly cut. Bedding plants grow rapidly; if the plants are all of one kind, to keep a uniform hight, they must be cut. If the plants are set in patterns, keep the division lines sharp and distinct....Cut away all flower-clusters as soon as the bloom is over, unless seeds are wanted....Dahlias, tall lilies and other plants will require stakes. Roses, especially the hybrid perpetual varieties, should be pruned severely immediately after blooming, to stimulate a vigorous new growth, and the formation of new buds and blossoms in the fall.

Greenhouse and Window Plants.

Now that the houses are empty, or nearly so, all needed repairs should be done to them and to the heating apparatus....If plants are left in the houses, shade, by whitewashing the glass, water as needed, and sprinkle the floors, etc., to keep up a moist atmosphere....Fumigate at intervals by burning tobacco....In a dry time, secure the year's supply of sphagnum moss from the bogs, and lay in potting soil, pots and other supplies.

Bee Notes for July.

Wherever the Basswood, or American Linden tree (*Tilia Americana*), is abundant, the choicest honey of the season will be collected. Not only does this tree produce honey in great abundance, but its quality is regarded by many as equal, if not superior to that yielded by white clover. As the Basswood is a fine shade tree, bee keepers should encourage planting it in their vicinity. It is much better suited to our climate than the European Linden, often used as a street tree in villages. When the yield of Basswood honey is abundant, it is well to empty the combs of other honey in order that this superior product may be kept separate. To be able to do this is one of the advantages of the honey extractor. Those who have not learned the merits of the extractor are behind the times. This, however, would be of no use, unless that greatest improvement in modern bee-keeping, the movable comb hive, has been already adopted. With movable combs, and the extractor, the bee has its usefulness, as a collector of honey, greatly increased, and the bee keeper who has not adopted them will find his profits correspondingly deficient. The worm or larva of the bee-moth should not be overlooked; the moth lays her eggs every month in warm weather. Strong colonies suffer but little, but weak and strong should be examined for the enemy, and the only remedy—killing—applied. Perhaps the best plan to diminish the numbers of the worms is to destroy the parent moth. A mixture of molasses, vinegar and water is very attractive to the moths, and if saucers containing this are set near the hives toward night, in the morning numbers will be found captured—victims to their appetite for drink of this kind. Italians defend themselves from the moth much better than the black bees. Cappings of cells removed in extracting, and all odds and ends of comb that accumulate in the operations of the apiary should be converted into wax. There are machines for effecting this, but a ready way is to place the wax on a cotton cloth, with a clean stone heavy enough to sink the whole; tie up the cloth to form a tight bag, and boil the whole in a large kettle of water. The wax, as it is melted, will ooze through the cloth, float to the surface, and is then skimmed off.

The Goldsmith Beetle

Our subscribers in New Jersey are complaining of the visits of the Goldsmith Beetle. This is a large and handsome beetle, of the size and form shown in the accompanying illustration. It is of a bright yellow color, with long, white, woolly hairs beneath, where it is of a metallic-green. As it belongs to the same family as the pestiferous May beetle we might naturally expect that it would have some of the bad habits of its relatives, if not all of them. But for some unknown reason the Goldsmith beetle has heretofore escaped severe censure for being a pest in the garden or on the farm, although it is a widely distributed insect. In the past few years, however, it has appeared in great numbers in Northern New Jersey, where the beetles attack various species of the poplar, and soon strip the trees of foliage. The present season they are far more numerous than ever before, and in some fields the plow has turned them up in such quantities that the surface of the plowed land was made fairly brilliant with these insects. The grubs or the Goldsmith beetle, feed upon the roots of the strawberry and other herbaceous plants, and when numerous are very destructive. The beetles, however, are so sluggish in their movements, that they can be readily shaken from small trees, or picked up when brought to the surface with plow or spade, after which their destruction is easy.

GOLDSMITH BEETLE.

The Buckwheat Crop.

Buckwheat is one of the most valuable grains, both for human food and for feeding animals. It is only slightly inferior to rye in nutritious matter, having much the same character as a food, and containing very nearly as much nutriment as oats. It has an undeserved reputation as productive of skin diseases in animals, the straw especially being considered injurious to pigs which are littered with it. We have never noticed anything of this kind in many years use of it, but on the contrary have found this grain a most useful one, and one of the easiest and cheapest to grow. It is sown at a convenient time, will produce a large yield if it has good ground, and it is easily thrashed. When mixed with corn and rye in equal parts it is one of the best feeds for horses, cows and pigs, and for the popular cakes for the table in winter it is unsurpassed by any other grain. For these reasons every farmer should grow an acre or two, and provide a good piece of land for it. We have grown seventy bushels to the acre on good ground and in a favorable season, but in the usual careless way in which this crop is treated, twenty-five bushels is rarely exceeded. The land should be well plowed late in June; in the South, August is early enough; and a peck of seed to the acre is sufficient. This is sown on the plowed ground, and one good harrowing to cover the seed is sufficient. The crop matures in about ten weeks, and should be harvested as soon as all the grain is set; although some may be green at time of cutting, it will ripen in the shock.

The Reasoning Power of Fishes.

SETH GREEN.

There are but few people who know that fishes possess any intelligence and reasoning power. In my long experience with them, I have many times witnessed actions on their part, which could not have been performed if they had not possessed a certain amount of reasoning faculty over and above what is commonly termed instinct, with which all animal life is endowed.

I will give the readers of the *American Agriculturist* a few observations which have caused me to believe that fishes can reason. In the winter of 1840 I hunted deer and fished for salmon trout in and around Bonaparte Lake, Lewis Co., N. Y. I fished by putting down one hundred hooks through holes in the ice about four rods apart. These were baited with good-sized minnows hooked through the back in such a manner as not to kill them. After the lines had been down the first night I took from them in the morning twenty-five good-sized salmon trout. Each successive morning thereafter I got a less and less number, until on the eighth day the number had diminished to about seven or eight. But the astonishing part of it was, that the bait was gone from every hook just the same as it was on the first morning, when I made the big catch. I knew that the trout were not all caught out, but it was very apparent that I could not catch any more without removing to a new ground and cutting a new set of holes, which I accordingly did, about a quarter of a mile from my former grounds. There my results were the same as before, and after fishing seven or eight days, I found it would be necessary for me to move again. One day I ran a line of hooks in such a direction, that one of them came over a rocky bar where there was open water. I saw there was an opportunity for an experiment, which I at once decided to try. I fastened the upper end of the line to an overhanging piece of brush, so that nothing could interfere with the bait below without decidedly moving the brush. Then I laid down on the ice with a coat over my head, so that I could look down through the clear water and watch developments. Presently a large, fine trout came along and began manœuvring with the minnow attached to the hook, and operated in the following manner: He kept as close to the minnow as possible, and repeatedly snapped at it very cautiously, re-opening his mouth before he had fairly closed it, so as to prevent getting anything in his mouth he did not want. When the lively minnow had swam away as far as the line would permit, the trout made a more forcible snap at it so as to cut it entirely from the hook. The minnow sank to the bottom, and the trout went after it and soon had it stored away. I then discovered why I had to move so often. I immediately baited the hook with another minnow and lowered it down; the trout came for it again and snapped at it as before. I let it sink to the bottom, where the trout went after it and swallowed bait, hook, and all, and I never missed another one where I saw the trout working at it.

But how came all the trout to adopt the same plan? I do not believe they could have done so if there is not some way by which they can communicate with each other. I have no doubt that they would have got the best of me again if I had let one get away, so that he could have held a consultation with his brethren. Trout are not the only fish which possess this reasoning power. We will take the little shad just hatched, with which many of our rivers have been restocked, particularly the Hudson and Connecticut, by the artificial method discovered by myself in the year 1867. When I deposited them in the river on either side, they would start directly for the middle of the stream. They knew that there were thousands of larger minnows which roamed along the shore to keep out of the way of the larger fish in the middle of the stream, and they would eat up the little shad which were too small for the larger fish to notice. Now if these little fish had not some sort of understanding aside from instinct, I do not think they would have pursued this course to avoid danger.

A Novel Poultry House.

The two illustrations given herewith represent the hen house at the Arlington farm, Cape May, N. J., and were sent to us by Mr. Geo. J. Kramer, who considers the structure superior, in most re-

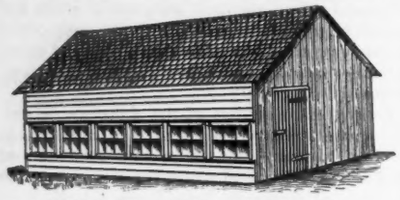


Fig. 1.—VIEW OF POULTRY HOUSE.

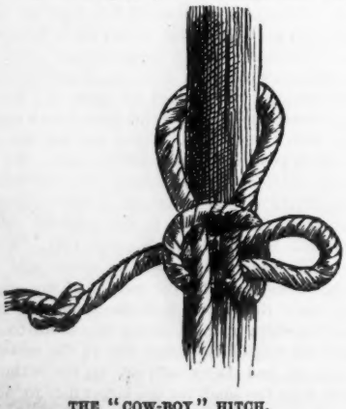
spects, to any he has seen. The farm is conducted in connection with the Arlington hotel, on the island near Cape May, and is visited in the summer season by strangers from all sections, many of whom have thought so well of this hennery as to make sketches to build from. Figure 1 represents the building proper; the posts are seven feet six inches, the sills and plates are of three by four hemlock and enclose a space twenty-two by twelve feet. The building faces the south with a row of six light sashes, elevated thirty inches from the ground, a door in the east and west ends and one swinging sash on the north side. The droppings are thrown from the latter, and it is a means of ventilation in hot weather. The structure shown in figure 2 stands inside of the house; it is five feet six inches in hight in front and is four feet high in the rear. The roosts are over the roof, the droppings fall on the solid roof and by the aid of a hoe are scraped into the gutter at the rear. The front, made of boards and lath, is three feet back from the front

Fig. 2.—SITTING HOUSE.

of the house proper, so that the sun strikes through the sash and into the sitting houses, seven in number. The nest boxes are double, and set half way in the opening. When a hen is ready to sit, the box end is reversed and she is fast in her sitting house, two by five feet, with the reverse of nest ready for another hen to lay in. The space around the inner house is sufficient for the hens to roam in in bad weather. All wood inside of the house being kept well whitewashed, there is no sickness or vermin; the speedy daily removal of the droppings avoids all smell, and the warmth of the house furnishes eggs all winter and early sitters.

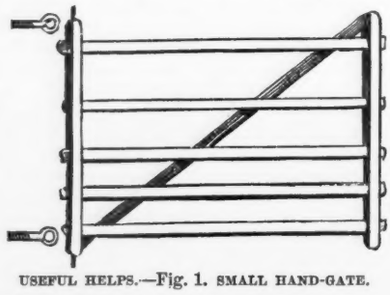
How to Tie a Horse to a Post.

In a former number of the *American Agriculturist*, J. J. J., of Maryland, recommends the "clove



THE "COW-BOY" HITCH.

hitch," and in a subsequent one W. Z. M., an old sailor, prefers the "rolling hitch." These gentlemen have both, evidently, "followed the sea," and, if they use a cable to hitch a horse, their methods of making a knot are, doubtless, admirable; but if they use a small rope or strap, and the horse should make a "strong" pull upon it, they, sailor-like, will be apt to think some hard words before they succeed in undoing the knot. A sailor who has turned farmer could be taught some useful lessons by Mexican and Texas cow-boys in the use of strings, straps and small ropes. Along with this article I send a drawing of the "cow-boy's hitch." I first saw it used during the war. A Texas cavalryman being detailed as courier, reported at headquarters for duty. Dismounting, he saw nothing more convenient to hitch his horse to than the leg of a table standing on the porch, at which the adjutant was writing. The cow-boy-courier had not more than entered the house when a gust of wind lifted some papers from the table and dashed them into the mustang's face. He made a snort and a dart. Away went horse and away went table, flying over the



USEFUL HELPS.—Fig. 1. SMALL HAND-GATE.

prairie for miles, and that "cow-boy's hitch" never came off—but the table-leg did. That courier would have hitched his horse to a sleeping soldier's leg if nothing else had been handy.

Presuming that your horse is fast at one end of the tether and you wish to fasten him to a post, take the loose end of the halter in your left hand, pass it around the post to your right hand and then place it in the left hand with the other part of the rope; then with the right hand take the loose end that hangs from the left hand and pass it above and around the two parts between the left hand and post, fold the end in a bow, and bring the bow back, through the loop formed, over the fingers of the left hand, leaving the knotted end on opposite side from the bow. Draw this half bow-knot tight around the two parts of the halter, and with your

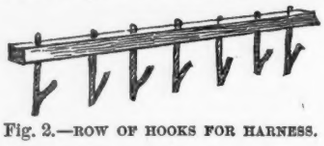


Fig. 2.—ROW OF HOOKS FOR HARNESS.

right hand push the knot firmly against the post, pulling the halter at the same time with the left hand to make it bind the post. The more the horse pulls the tighter it will bind, and it will never slip down on the post if you have exerted proper force in making the tie To unloose the halter, take hold of the knotted end and pull out your bow-knot.

TALLAHATCHIE.

Useful Helps for Farmers.

Going to the store for every little thing that may be needed runs up a very heavy bill to be paid at the end of the year. Many articles of farm furniture may be made on rainy days, or in spare hours, which not only answer every purpose they are needed for, but save expense and afford satisfaction to the maker in two ways—he has the use of many conveniences and he has his money in his pocket. An axe and an auger will serve to make a great many useful things on the farm.

Figure 1 represents a small hand-gate, made wholly of wood with the axe and auger. The hinge-eyes are shown as they are made ready to put into the standing post. The latch is cut out with the axe.

Figure 2 shows a row of hooks to hang harness upon. They are made of crotches cut from small limbs and inserted in a round stick, which is pinned to the posts or studs of the barn. At figure 3 is

Fig. 3.—SHELF BRACKET.

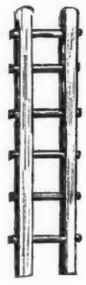


Fig. 4.—BAR POSTS.

seen a shelf bracket hewn out of a root. We have seen some of these made from cedar roots, sand-papered, oiled and polished, holding up a wooden mantel-piece, the whole work of which was home-made and very handsome.

Figure 4 shows a pair of bar posts, in which the posts are bored and the supports for the bars are made of white oak pins wedged into their places. In wedging pins of this kind, they should be split horizontally, so that the wedge will not crack the post, the pressure being with the grain and not across it.

Figure 5 represents a hitching-post, which is commonly seen in some sections around the court-houses and meeting houses. It is wholly made with axe and auger. So is the "lizard," figure 6, or dray, hewn out of a crotch of a tree, which is useful to draw logs on, or for a stone-boat or a sled for plows, harrows and bags of seed.

Kindness to Animals.

Every one should know that kindly treated animals will do their best for their owners. A curi-

Fig. 5.—HITCHING-POST.

ous case happened recently, which may be given as an example. A noted trotter was driven in a race by a strange driver. The horse was evidently dissatisfied and lost two heats. The old driver knew the horse could do better, and begged the owner to be permitted to drive him. His entreaties prevailed, and when he mounted the sulky the horse whinnied with pleasure, and won the next three heats with ease, making such a record that the owner had an offer of fifteen thousand dollars for the animal. It is always thus. A farm horse kindly treated will do more work than one which is not attached to the owner or driver. A cow will lose milk when attended by a strange or disagreeable person, and one that is petted and treated with gentleness will never exhibit the common fractiousness of kicking, or holding up the milk. This is true of all farm animals, who return kindness with affection and generosity, and abundantly repay the consideration shown them by their owners.

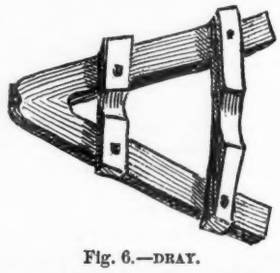


Fig. 6.—DRAY.

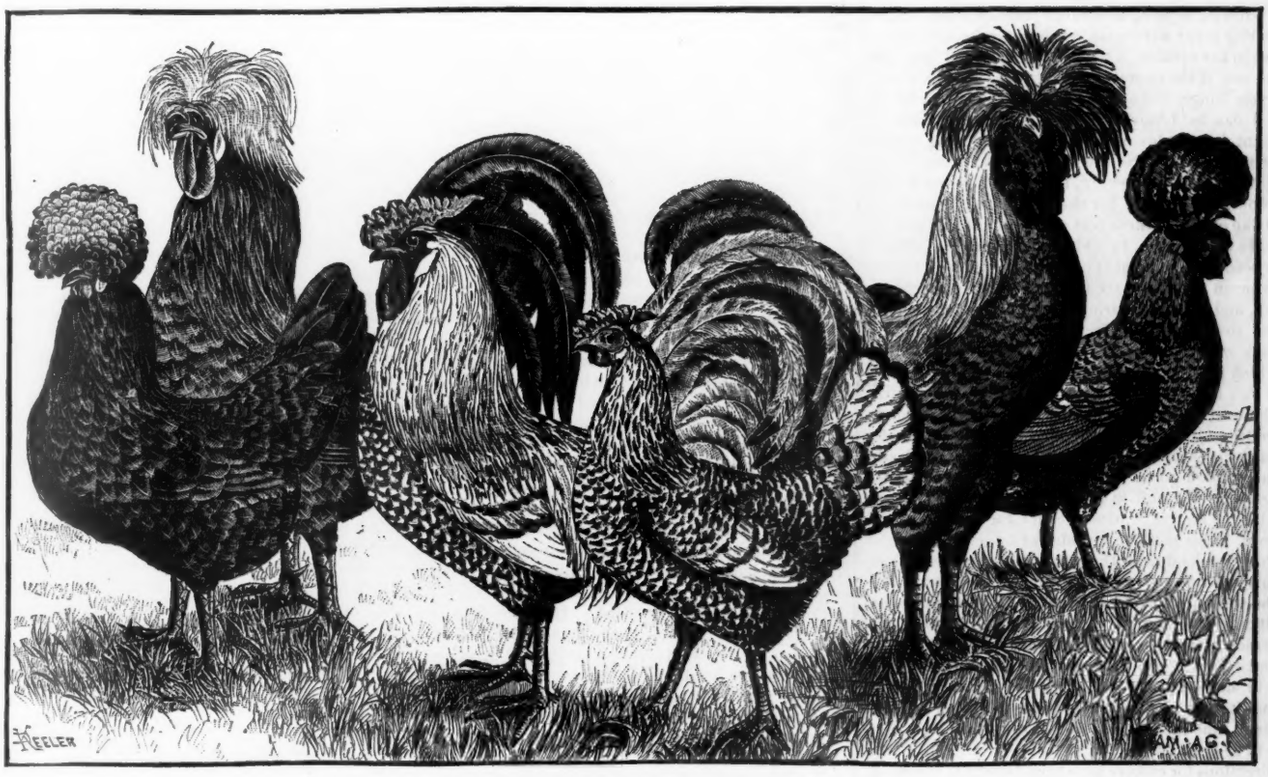
Every boy, especially every farmer's boy, should early learn to treat all animals with kindness.

Non-Sitting Layers.

Our engraving represents a group of three varieties of non-sitting fowls, typical of a much larger number of kindred kinds. In the foreground we have the most beautiful, highly bred, thoroughly studied and brilliantly feathered of the Hamburgh class—the Silver Spangled Hamburgh. This class is distinguished by its full rose-comb, clear, white ear-lobes, blue legs, and close feathering. The varieties vary greatly in plumage. The one in the engraving is white, or nearly white, with every feather tipped with black. The black spots may be round or half-moon shaped, and the cleaner the body of each feather is, and the more perfectly defined the black spot, the better. The fowls are not large, but lay persistently an egg of fair size. They are very compact, strong on the wing, hence full-breasted, and make very good table fowls. Their value is as layers, and for ornament, for they are among the most beautiful of all varieties of fancy fowls. The variety, Golden Spangled Hamburgh, has rich, yellowish-red plumage, spangled with black. The Black Hamburgh has black plumage, spangled with velvety-green, iridescent spots, which add greatly to their beauty. Besides these, we have the golden and silver penciled varieties, a little smaller than the others, but very pretty fowls and great layers. The Hamburghs commend themselves to those who wish to raise pure-bred fowls of thoroughly fancy breeds and useful chiefly for their eggs.

The Polish Fowls.—The two pairs of fowls in the background are of the Polish class. The pair upon the left of the picture are of the White Crested Black variety, one of the most unique and beautiful of all barn-door fowls. The plumage is glossy black, and the crests, except a few feathers over the eyes and in front, are pure white. They have blue legs, white ear-lobes, and showy wattles, without the muffler or beard which distinguishes other varieties. Like the whole class they are persistent layers, rather delicate however, but exceedingly ornamental.

The pair of fowls on the right, with black beards, are the Golden Spangled Polish, very rich in their reddish-golden hues, with black-tipped feathers; an attractive and useful breed, famous also as layers. The Silver Spangled variety is similar, with much lighter, nearly white plumage, marked similarly with black. The whole family is interesting, not alone for its usefulness, and for the beauty of its feathering, but on account of the enlargement of the skull under the top-knot, which is most remarkable in the case of the White Crested Black.



NON-SITTING LAYERS.

Drawn and Engraved for the American Agriculturist.

The "Chicken Business."

There is unusual interest shown in the matter of poultry raising for egg production and for the market. Whoever is expecting to do much in this way will do well to "take time by the forelock" and get ready before the autumn crowds the winter and the time is ripe for beginning work. Extraordinary progress has been made in the construction and management of artificial incubators and brooders within the past few years. Now-a-days the percentage of eggs hatched by them is fully equal to that hatched by hens as ordinarily managed. Now and then, indeed, a hen steals her nest and hatches every egg; but for every brood so hatched, no doubt two full nests of eggs may be found in the bushes with every egg addled and lost. These stolen nests are peculiarly liable to accident. Skunks, than which no more useful animals exist on many insect-infested farms, make it their especial business to hunt out these nests. Most farm dogs enjoy a fresh egg as well as the most fastidious city customer. Crows, though less fastidious and discriminating, break up many a hen's nest. There is also a long list of vermin of various kinds, besides the average "hired man," all of which are fond of eggs, and the depredations of which essentially reduce the percentage of eggs which hatch when left to nature and the instincts of the maternal bird.

In the incubator those eggs which are either not vitalized, or in which the vitality has been essentially impaired before the hatching process is begun, may be removed on the third to the fifth day. Their removal makes room for others, so that the incubators may be kept working up to their full capacity. This is a great gain, especially as these eggs are uninjured for cooking purposes and find ready sale at ordinary market prices. Besides, eggs which die after the first process of development begins may be discovered and removed on the tenth day, and in some cases later. These, too, are not lost, but when well boiled are excellent food for the young chicks. Finally, eggs which develop to the full extent and which fail to hatch on the twenty-first to twenty-third day, may be cooked and utilized as food for older chicks or fowls; so that really none are absolutely wasted.

In regard to artificial brooding there is no qualification as to its economy. There are numerous plans, as there are numerous incubators, but in whatever way chicks are hatched, artificial brooding may be employed. It is best that the chicks should never know a mother's loving care. The old hen's first gift to her brood is lice. Within a few hours after they leave the shell every chick, if left under the hen, will have more or less lice upon it, while if removed at once, even before they are dry, and placed in a good brooder they will be entirely free and will remain so until they begin to associate with mature fowls. In the brooders the little things have all that they need, and are liable to get no harm. If well cared for, supplied with proper food, moderate warmth and good ventilation, they will be more healthy, grow faster, meet with fewer accidents and by a large percentage become superior fowls to those brooded under hens. They are exempt from the ordinary diseases of chicken infancy, "the pip," "gapes," etc.

It becomes an important question which incubator to use. Of course we all want the best—but which is it? There are a few suggestions to be made in connection with the selection, which will probably insure satisfaction with the choice.

First—Select some standard style; because, after an incubator has been some years before the public, we have reason to believe that a substantial company, firm or business man is behind it; that the faults of the first construction will have been remedied; and that there is not only business responsibility on the part of the makers, but experience, and the results of the use of the machine by

others—a sure way to learn its faults and indicate better construction.

Second—Select one of simple form, easily understood, having no complicated or delicate mechanism.

Third—Select one thoroughly made, substantial, neat, with close joints, large capacity for heat (for instance, a large water-tank, which undergoes changes of temperature very slowly), and

Finally, one recommended by responsible persons with whom you can communicate.

It is always best to be deliberate in making choice of such an article; and one may nearly always find some of almost any standard kind in use by practical people where they may be seen; and if not, then parties may be communicated with by letter (return postage).

Asparagus from Seed.

PETER HENDERSON.

Growing asparagus without transplanting is now finding many advocates. It is not only a cheaper, but in my opinion, a much better method than the old one, if the operator can have patience to wait a year longer for a crop. The plan is very simple and can be followed by any one having even a slight knowledge of farming or gardening work. In the fall, prepare the land by manuring, deep plowing, and harrowing, making it as level and smooth as possible for the reception of the seed. Strike out lines three feet apart and about two to three inches deep, in which sow the seed by hand or seed drill, as is most convenient, using from five to seven pounds of seed to each acre. After sowing, and before covering, tread down the seed in the rows with the feet evenly; then draw the back of a rake lengthwise over the rows, after which roll the whole surface. As soon as the land is dry and fit to work in the spring, the young plants of asparagus will start through the ground, sufficient to define the the rows. At once begin to cultivate with hand or horse cultivator, and stir the ground so as to destroy the embryo weeds, breaking the soil in the rows between the plants with the fingers or hand weeder for the same purpose. This must be repeated at intervals of two or three weeks during the summer, as the success of this plan is entirely dependent on keeping down the weeds, which, if allowed to grow, would soon smother the asparagus plants, that, for the first season of their growth, are weaker than most weeds. In two or three months after starting, the asparagus will have attained ten or twelve inches in hight, and it must now be thinned out, so that the plants stand nine inches apart in the rows. By fall they will be from two to three feet in hight and, if the directions for culture have been faithfully followed, strong and vigorous. When the stems die down (but not before) cut them off close to the ground, and cover the lines for five or six inches on each side with two or three inches of rough manure. The following spring renew cultivation, and keep down the weeds the second year exactly as was done during the first, and so on to the spring of the fourth year, when a crop will be produced that will well reward all the labor that has been expended. Sometimes, if the land is particularly suitable, a marketable crop may be secured the third year, but as a rule it will be better to wait until the fourth year before cutting much, as this would weaken the plants. To compensate for the loss of a year's time in thus growing asparagus from seed, cabbage, lettuce, onions, beets, spinach or similar crops that will be marketable before the asparagus has grown high enough to interfere with them, may be planted between the rows of asparagus the first year of its growth with but little injury to it. I had an old friend near Macon, Ga., who grew an acre of asparagus after this plan. It was sold in the New York market and brought him an average of one thousand dollars a year for six years after it came into bearing. He died some ten years ago, and I presume the plantation was neglected, or it might have been in full bearing yet.

There is no market garden crop that is so certain of sale and so easily shipped as asparagus, from the fact that it has perhaps greater value for its weight than any other vegetable; besides, it matures at a season when the temperature is low, so that whether shipped from the extreme Southern States to our large cities in the Middle States, or from the latter still further north, there is never danger from injury in transit. The reason of its being profitable is obvious. The grower has to wait three or four years for a crop. The majority of cultivators either cannot or will not wait, and hence it becomes profitable to the few who do.

Filling and Taking Care of a Fernery.

Before putting any earth in the pan to contain ferns, procure some charcoal, break it up in pieces as large as a walnut, place in the bottom of the pan and cover with earth; the charcoal will keep the soil sweet and act as drainage. The best soil for a fernery is found in the woods under trees, and is composed of leaf-mould and decayed vegetable matter, is black and spongy, on account of the fibrous matter in it. Ferns grow in this soil, in many shady places, and these are the best plants for a fernery, and can be taken up without disturbing their roots much. The Partridge-berry, *Mitchella repens*, is a most desirable plant in a fernery on account of its creeping habit. It covers the ground with its rich green leaves, and its bright red berries are very ornamental. Get a few roots of it by all means. Large growing ferns should be avoided. The Maiden-hair is the best, and this, with one or two roots of the ordinary kind, found in most woods, and a half dozen roots of the Mitchella, will be quite enough to fill your fernery. You must not expect it to look to suit you at first. Give it time to develop, and do not attempt to make it appear like an old fernery at the outset by crowding in large plants. The leaves of these will almost always die, and you will have to wait for new fronds to grow; small plants are best.

Cover the soil, which should be slightly heaped up in the center, with moss, and then water. Put on the cover, and wait for further developments. Very soon tiny fronds, curled up in a cunning way, will peep through the moss, gradually they will unroll, and soon you will have beautiful fern-leaves, which will speedily be followed by others, until your fernery is filled with beauty. Never allow it to become crowded. If there is any danger of this, cut out some of the older leaves. As soon as one turns yellow remove it at once. You will not need to give it water oftener than once a month if the glass fits moderately tight. The moisture from the soil will be condensed on the glass and returned to it. Always examine the soil carefully before watering. If it is not quite moist and damp, give more water; if it is, do not. By no means give enough to make the earth muddy, for that will be "too much of a good thing." If there should be so great an accumulation of moisture on the glass as to obscure the view, raise the cover a trifle and let it evaporate. It is not necessary to give the plants any direct sunshine. Their needs are—sufficient water to keep the air in which they grow moist, a cool window rather than a warm one, and the removal of all decaying matter. Attend to these things and you can have beautiful ferns. Their care is very simple, and yet many persons think it almost impossible for an amateur to succeed with one. A trial would convince them of their mistake.

IMPROVEMENT OF PASTURES.—It is singular that so little attention is paid to this by our farmers, for there is no reason why the grass should not be as early in the spring, as late in autumn, and as abundant on them as on the mowing lands. Instead, then, of its requiring three to four acres of pasture to carry a cow or bullock through the whole season, it would not be necessary to devote over the half of this, unless it happened to be particularly dry during the summer months. The great fault in managing pasture lands is, in letting them get impoverished, and turning stock upon them too early in the spring, and keeping them too late in autumn. Another thing, a sufficient variety of seed is not sown on them. English farmers usually sow from six to twelve sorts or more, and thus if the weather does not happen to soil one kind, or two, it may all the others, and thus ensure a reasonable bite of grass during the whole season.

Care of Work Horses.

The grooming—as it is called—of horses, is quite as important as the feeding, and in summer time when the teams are worked hard, it is indispensable to their welfare. The skin of an animal is one of the most active excretory organs, and is furnished with an enormous number of pores, through which passes a constant stream of moisture, that is charged with waste and offensive matter from the blood. Besides these there are thousands of minute glands in every square inch, which secrete an oily fluid which keeps the skin soft and pliable; and in addition, every hair on the skin is rooted in a follicle or gland, which supplies the special nutriment required for it. Moreover, the surface of the skin is continually wearing away as it is renewed by the new growth, and this waste, dry matter scales off, and needs to be removed by the curry-comb and brush. When a horse is working, the excretion from the skin is profuse, and pours from it in the form of perspiration. When this dries on the skin it leaves a quantity of impure matter adhering to it, which is apt to close the pores and prevent the escape of the perspiration. This produces disorder, in the form of congestion of the myriads of capillary vessels which form a close net-work near the surface of the body, and the excretion and secretions being stopped, the skin becomes harsh, dry, contracted and diseased. The impure matter—being unable to escape—gathers in places and forms pimples, blotches or tumors and, if it is not removed, there is danger of poisoning the blood, and, with the appearance of farcy and glanders, finally death. All this may be prevented by careful attention to the skin, by occasional washing, regular currying and brushing, and proper care to avoid galling by the rubbing of ill-fitting harness. As prevention is the best cure, it is well that owners of horses should exercise all possible precautions to avoid the frequent disorders which result from neglect in the direction pointed out, and thus save much annoyance and loss.

Rearing Calves to Advantage.

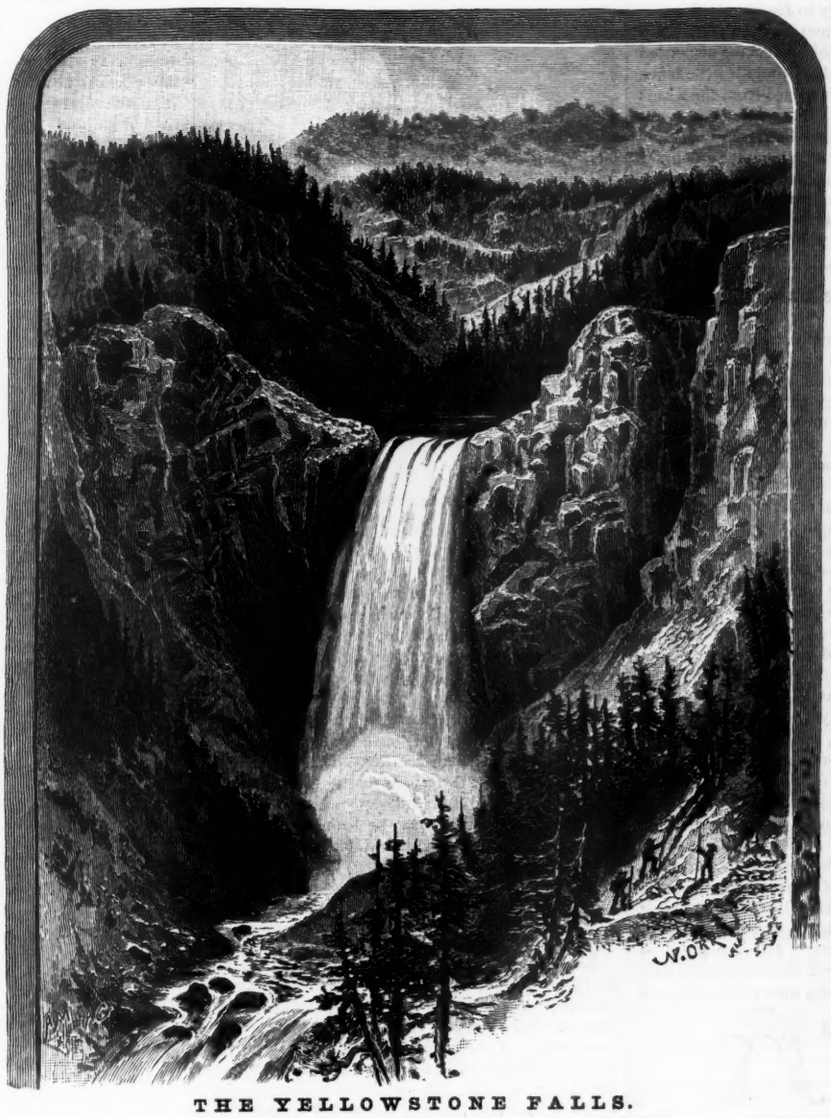
First, own good cows. Treat them kindly and keep them docile and quiet. When about to calve, place the cow in a separate stall and leave her loose. Feed no grain or stimulating food for a month before calving. When the calf arrives, remove it to a pen at a distance where it can be kept quiet and comfortable. It will never know what it is to be with its mother, and much trouble afterwards will be spared. In three or four hours milk the cow, and give the milk to the calf, teaching it to drink. With patient skill the calf may be taught to drink in the first lesson. Milk the cow four times a day, and feed the milk to the calf until the fourth day, when the cow is returned to the stable and the milk is saved for skimming. The calf gets only skimmed milk after this—three quarts at a feed twice a day, and warmed up to eighty degrees. The feed is gradually increased as the calf grows, and when it is two months old it is taught to take a little mixed ground corn and oats, and have a small quantity with the warmed skimmed milk until it is six or eight months old. This enables the calf to make a fine growth, and brings it up in docility and gentleness. These qualities are improved by a daily brushing and carding, and by using it to the halter and to lead, while it is being fed in the pen. Continual handling in this way prevents the contracting of any of the common vices, and when the calf becomes a cow, it is in an excellent state of dicipline and gives no trouble. This method, well carried out, is the main step toward an improved herd, which will be of very great value, and one gained at a very small cost.

My Visit to the Yellowstone Falls.

GEN. GEORGE W. WINGATE.

Any descriptions which the readers of the *American Agriculturist* may have read, can not convey the faintest impression of the beauty and grandeur of the Yellowstone Falls in the Yellowstone Park, as they burst upon me and my family when visiting them a few months ago. High bluffs hem in the Yellowstone River on both sides, forcing the water into more and more turbulent rapids and cascades, until at the Upper Falls the water is confined into a chasm of eighty feet in width, with banks from two to three hundred feet high. The torrent rushes over this fall with an impetuous sweep, and drops with a sheer descent of one hundred and twelve feet in an unbroken sheet upon a huge rock below, with a shock which throws up great clouds of spray, nearly to the summit of the fall above the water, forming an immense whirlpool, which slowly circles at the foot of the fall. Emerging from this, the river tears like a mad thing, breaking into rapids and cascades for half a mile further, between rocky cliffs, which grows constantly higher and higher, until it hurls itself over the Great Falls, in an appalling leap of three hundred feet, and then plunges in a succession of cascade after cascade into the dark abyss of the Great Cañon.

The point where we stood afforded a magnificent view of both the Great Fall and the cañon. On the right was the Great or Lower Fall, the water dark-blue on the surface of the river above, and changing into a huge snow-white curve as it made its vast plunge of three hundred feet—double the height of Niagara—and terminating in an enormous fountain of spray, from which huge clouds of mist rolled far up the great cañon, and through which a beautiful rainbow could at times be seen. But the cañon itself was so stupenduous that the fall, grand as it was, formed but an incident to it. Far beneath and to each side of us, extended a vast gorge or cleft in the mountains more than a thousand feet deep, a thousand yards wide at the top, and narrowing at the bottom to almost nothing; so deep, that the river below seemed like a green ribbon, flecked here and there with patches of white; and great trees below appeared no larger than one's finger. The sides were perpendicular cliffs, like five rows of the Palisades of the Hudson, set one above another. These were not simply naked stone, such as is seen in other cañons, but were of the most variegated and startling hues, partly caused by the natural colors of the rocks, partly from different mosses and algae, which are nourished by the mists of the falls, and partly from the action of hot springs, which had formed different colored deposits through the ages that had been occupied by the water wearing out this huge passage through the rocks. On one side would be a vast cliff, of a pale pink; adjoining it, another of buff, and opposite, a promontory of purple. Red, yellow, orange and brown were all visible at once, and beneath all ran the river, changing from blue to green and flecked with white cascades. On the right side, just below the falls was a great bank of snow the size of a house. The sun was shining brightly, but the snow lay far below where its rays could penetrate. The cañon extends for some twenty-four miles, winding and turning so that but a short portion of it could be seen from any point. At each turn the scene changed. At one place the walls of the cañon were perpendicular, at another they extended with an even slope from the brink above to the edge of the river, and at a third they were broken into projecting crags and peaks, which rose one above the other to the level of the plateau above. At all times several eagles were slowly circling through this dizzy gorge, but looking like sparrows in the immensity around them. The silence, the depth, and vastness of the scene were overpowering.



THE YELLOWSTONE FALLS.

Drawn and Engraved (by N. Orr) for the American Agriculturist.

TAKE CARE OF THE TOOLS.—A place for everything and everything in its place is a good, old adage, but it is sadly neglected by farmers. As a rule, farm tools are rusted out much more than they are worn out. Every tool should have its place, and be returned to it when it has been used, and it should be cleaned and kept bright and sharp. A rusty plow, shovel, spade or hoe is twice as hard to use as a bright one, and to get such a tool bright it should be ground on a grindstone, or scoured with a piece of brick and sand and water.

Fencing In and Fencing Out.

The aggregate expense of maintaining the fences of the farms of this country is enormous; the figures represent an incomprehensible amount. Being part of the expense account, the cost of fencing is so much taken from the profits, and any reduction in that expense is just so much added to the net profits. The major part of this expense is due to a change in our law of fencing from that of the old English common law, which law an eminent person has pronounced "the perfection of reason." Our law is generally founded upon the old English common law, the most signal exception being the law relating to fencing. By the English law each man was required to keep his own animals in; by the law generally prevailing in this country, he is compelled to keep everybody else's out. Thus a premium is put on shiftlessness. The thrifty farmer who cultivates his fields well and provides good pasturage for his stock, must pay heavy tribute to his unthrifty neighbor who expects his stock to subsist upon the scanty herbage of the roadside, save when they break into some neighbor's enclosure. The thrifty farmer is compelled to maintain at least four times the amount of fencing which otherwise would be necessary, simply because the law favors the lazy makeshift. As the people who made this change were naturally wedded to the English law, they must have had some good reason for altering it. The reason was this: But a small part of the land was the property of private individuals. The public lands afforded splendid grazing. If the English law remained in force, this grazing could be taken advantage of only by herding. While the unoccupied land considerably exceeded the occupied land, it was more economical to fence stock out than to fence it in. Hence, the law was changed, and reasonably changed. But all grounds for the change have long since passed away in the greater part of the territory where it now prevails. In a large majority of the States it would be more economical now to revert to the old law. That this reversion has not already taken place is because of our prejudice and sentiment. Prejudice in this, that we are more disposed to endure evils, while evils are sufferable, than to right ourselves by changing the things to which we are accustomed. But the inconvenience and expense resulting from the present law should certainly stir us up to a change. Many profess to being deterred from working for the change by a sentiment, a feeling of charity towards their less fortunate neighbors, who cannot provide pasture for their stock. But on account of the poor sustenance and the abuse which animals running at large receive, it would be better for their owners to sell part and with the proceeds provide good pasture for the balance; for one cow on good clover pasture is more profitable than two cows pasturing in the highways. Also, those who feel that they must

dispense charity to their less fortunate (or thrifty) neighbors would do better to provide pasture elsewhere than in the highways, since the saving in the fencing required would far more than compensate for providing the pasture, which would, furthermore, be better; and greater charity would be dispensed at less cost.

The law has been changed in some localities; and so far as we have been able to learn, where a community has reverted to the English common law, they have been fully convinced of the wisdom of their action. It is necessary to fence only the pasture fields, and movable fences may be used. Not only is seventy-five per cent. of the fencing dispensed with, but with it gates and bars, and also the fence corners; and the fence row is gained from the weeds and briars, for cultivation. Where the change has not been made, it can doubtless be accomplished by that agitation of the matter which, under a popular government, is the only thing that changes long established laws; and in this case it cannot fail of its object, since it has the weight of reason and the claim of economy and the public good on its side.

The Enemies to the Onion Grower.

The Onion Fly is often mentioned as the cause of great loss to the onion grower. There are at least two very distinct insects known as onion flies—the native and the imported. As the habits of both are similar, and the means of their destruction the same, they may be practically regarded as one. The native species has, thus far, proved destructive in but a few localities in the Western States—the fly so troublesome at the East being the imported one—*Anthomyia Ceparum*. This belongs to the true flies, of which the house fly is a quite too well-known representative. Indeed, the insect is not very unlike the common fly in general appearance. In figure 1 is shown the perfect insect; the lines directly above it give the real length of its body and the spread of its wings. These flies appear in May and June, emerging from the ground, where they have passed the winter in the pupa state. The female lays her eggs upon the leaves of the young onions, a little above the surface of the soil. The eggs soon hatch and the little caterpillars make their way down to the base of the young bulb, into which they penetrate, forming a burrow in which three or more feed and grow for about a fortnight. Having attained their growth, the maggots leave the bulbs for a short distance, and, by the thickening of their skins, become chestnut-brown pupæ. Figure 1, besides showing the perfect fly, gives the maggot, on the right, with a line indicating its real length, and the pupa, or fly-case, on the left. Figure 2 shows a section of a young onion attacked by the onion fly; *a*, *a*, are

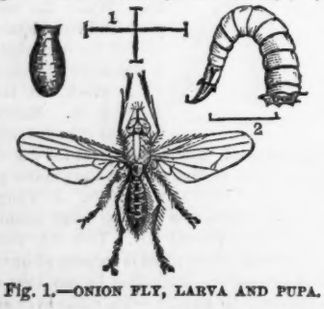


Fig. 1.—ONION FLY, LARVA AND PUPA.

clusters of eggs; *b*, the hole made by the maggot in entering the bulb; *d*, the burrow, with the larvæ eating within it. The entire development of the fly, from the time the eggs are laid to that when the perfect insect appears, is from four to six weeks. The first brood at once lays eggs for a second brood, and so on through the season; the pupæ of the later broods remain in the ground all winter, the perfect insects from these appearing in the following spring. Figure 2 shows the destructive manner in which the bulb is cut through by dividing its rings, which are really the lower parts of the leaves, and the death of the plant soon follows. The first brood of the insect appears in spring from the pupæ which passed the winter underground. The numbers in this case are comparatively few, and could these be destroyed, the chances of a second, and other broods, would be small. Upon the first appearance of injured leaves in the plantation, the plants showing them should be removed. If pulled in the usual manner, the plants appear to

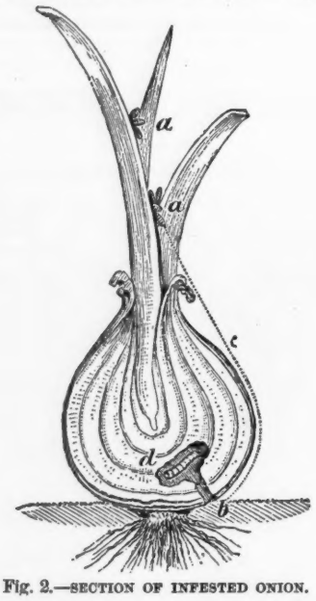


Fig. 2.—SECTION OF INFESTED ONION.

come up readily, but it is only the leaves that are taken up; the decaying bulb is left below as a rotten mass, containing the larvæ or pupæ, and nothing is gained. The removal of the injured onions is best done by the use of a broad knife, thrust down below the bulb; the whole plant may be raised and the maggots it contains. Such plants should be received in a pail or other tight vessel, to prevent any scattering of the maggots; these, or pupæ, or eggs, should be killed by burning or scalding. Several applications have been applied to destroy the flies, with more or less success. That regarded with most favor is kerosene oil, in the proportion of two to four tablespoonfuls to a gallon of water; the liquid should be thoroughly stirred, and sprayed over the onion bed, two or three applications being required.

Cultivation of Corn.

Modern experience tends to favor the shallow and superficial culture of corn, rather than deeper plowing. After the corn has been planted, a plow should not be used in the corn-field, but the cultivator only. The surface alone needs to be stirred, and the oftener it is mellowed and loosened, the better for the crop. The writer has grown several crops of over one hundred bushels of grain to the acre, and in every case in which this unusual product was reached, it was when the ground was worked with the horse hoe every week until the corn was in tassel. When, unavoidably this frequent cultivation was missed, the yield fell sometimes as low as seventy or eighty bushels per acre, showing—all other treatment being the same—that the frequent working of the soil has a most useful result on the crop.

SALT FOR PASTURING STOCK.—The ash of plants is least when they are in a succulent and immature condition. There is, therefore, less salt and other mineral matter in pastured grass than in hay or full-grown grass. For this reason a liberal quantity of salt is indispensable for all farm animals in the summer, and this need becomes evident by the avidity shown for salt by cows and sheep at this season. A cow in full milk requires one ounce of salt daily, but it cannot be supposed that seven ounces given once a week, will be the same as one ounce daily. A cow might as well have the whole week's rations of feed given at one time, as the whole quantity of salt given in one dose.

Recurring Fertilization.

If one were to give any animal a month's provision all at once and expect the food to be used with economy and benefit he would be sadly disappointed. It is much the same with plants as with animals in regard to the use of plant food, especially of the extremely soluble and active kind known as artificial fertilizers. These being so soluble are quickly carried down into the soil, and we have the testimony of the best authority existing that the waste and loss of these fertilizers may be seen by examining the water flowing from the drains very soon after they have been applied to the soil. The nitrates especially, appear very quickly in the drainage water, proving that they are carried beyond the reach of the roots in a short time. This of course is a serious waste and loss of money to the farmer. To avoid this, the system of recurring fertilizing may be adopted. This consists in dividing the quantity of fertilizer into three or four portions, and applying them at various stages of growth of the crop, from the planting up to the time the crop is laid by. For corn, the last application is made when the silk begins to fade and the grass begins to form, thus furnishing food when the crop needs it most.

"A New Garden Rake."

The above is the title with which the "English Mechanic" introduces a description and illustrations of a rake; we reproduce these engravings that our readers may see the latest fashion on the other side in garden implements. They will, no doubt, conclude that this rake was designed by a mechanic rather than by a gardener. Like nearly all English garden implements, this is several times heavier than it need be; hence, a large share of the strength of the workman is expended in carrying a superfluous weight of metal. The chief merit claimed for this rake is in the utility of the broad teeth or wings at the ends. These might, in working, develop a usefulness not apparent from an inspection of the engraving, but we doubt it. The inventor evidently wished to combine a hoe and rake in one implement. No one tool that we

GARDEN RAKE.

have met with is so effective in weed killing as the triangular steel hoe, Ours are made with the tooth of a mowing machine as the blade. This is attached to a shank in such a manner that it will not be difficult in using it to keep it parallel to the surface of the soil. If the edges of the blade are kept properly sharp, this triangular hoe in skilled hands will do an astonishing amount of weed killing.

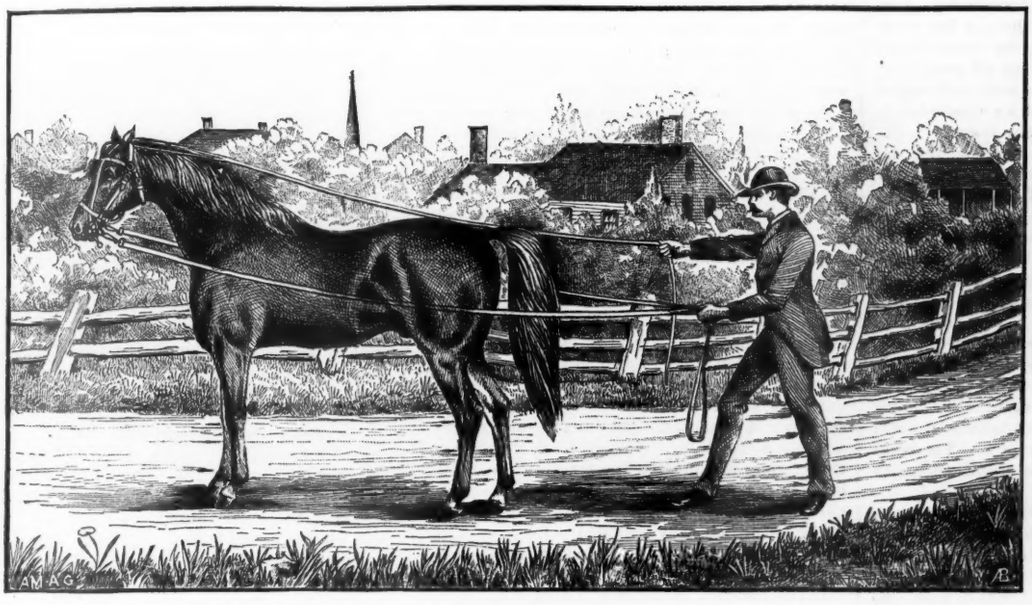
Breaking and Training Colts.

OSCAR R. GLEASON.

In breaking a colt the first lesson should be to turn him loose, either in a box-stall or carriage house, and, with the whip in the right hand, slowly approach him and crack the whip. The colt will run away from you and generally go into the corner. Follow him up, however, and keep cracking the whip until he turns his head towards you. The moment he does this, step right up to him and caress him on the point of the shoulder. If he should, as you approach him, whirl around and kick at you, keep your eyes open and quickly give him a sharp cut on the hind legs with the whip. By following this up carefully, in a very short time he will learn to his sorrow that when he turns away from you, and attempts to let his heels fly, he receives punishment, and that when he looks you in the face he is treated well and rewarded. The intelligence of any colt is always sufficient to perceive this, and in fifteen to thirty minutes he will follow you around like a dog. As he will feel that you are his superior and master, he will show no desire to kick. What the fingers are to a man, the nostrils are to a horse; and any object that seems to occasion a feeling of fear in the horse, you should slowly either take him to or bring up to him, and permit him to nose around it and smell it until he is satisfied it is harmless. For instance, before making any attempt to put on the halter, take it in your left hand and let him smell it; then buckle it on over his neck. Always be very calm and quiet in your manner, and talk softly to the horse, which goes a great way towards getting him accustomed to your presence.

If the colt endeavors to pull away after the halter is on, my plan is to circumvent him by a little strategy. Take a common clothes-line rope and make a large slip-loop knot around the body, drawing it moderately tight, and pass the end up between the front legs through the halter. The reason for doing this is very apparent. He cannot understand how anything can pull the hind part of his body and his head at the same time; and on feeling the strain behind he will go forward, and thus you will accomplish your object without being compelled to use force. Taking this rope in the right hand and standing directly in front of the colt, say, in a decided manner, "Come here!" and at the same time pull the rope sharply. The colt will invariably move forward, and when he does so, caress him. Repeat this two or three times, until he will quickly move forward; then say, "Come here!"

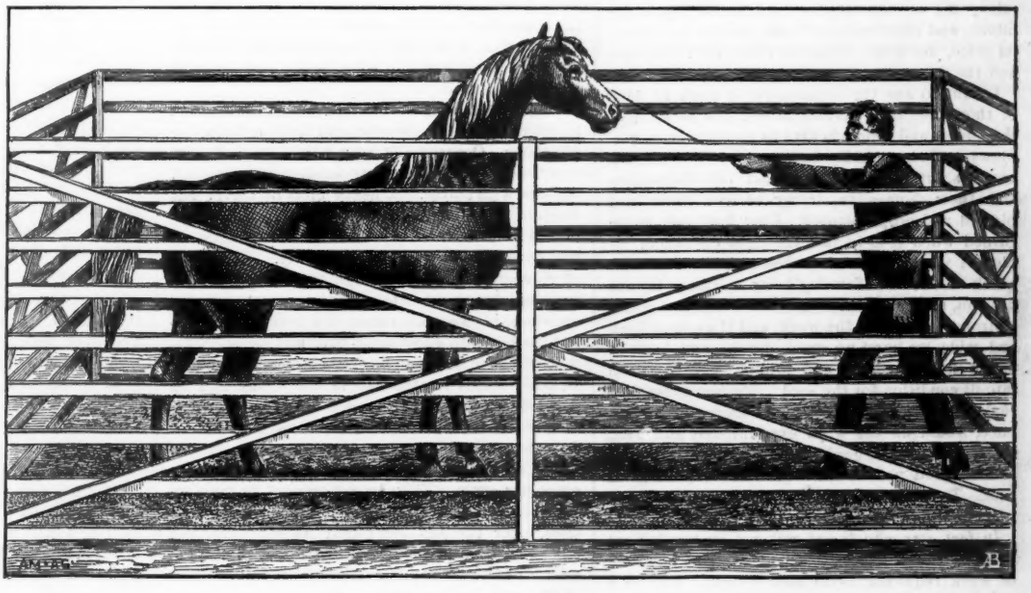
Next, with the rope hitch him to the manger or to a post, and, standing in front of him, open and shut umbrellas, shake buffalo robes and beat tin pans—in fact, make as much noise as possible without touching him. Of course he cannot think of two things at once, and the rope tied around him behind catches him by surprise, and he will end by giving up trying to get away when he finds that he is freer from pain when he is quiet and still than when jerking his head. For a very nervous horse put the rope as far forward as possible around the body. This treatment can be applied until he is thoroughly halter broken. The same arrangement is the most successful one in existence for halter pullers, and is also a most valuable assistant in leading a horse behind a wagon. How many people are at their wits' ends continually when on a long ride with a horse tied to the carriage behind—and yet this simple invention would prevent it all, and they would not be obliged to even give the horse a thought.



FIRST LESSON IN COLT TRAINING.

Drawn and Engraved for the American Agriculturist.

The next lesson to be given the colt should be the harnessing. First, put on the open bridle with the straight bar bit, and run the lines back through the thill straps. Then teach the colt to turn to the right and to the left, and to stop at the word whoa. These lessons should never be longer than an hour each, and generally only two a day. Check-reins I do not approve of, as, in my judgment, if a horse is foaled without style, you cannot help the matter any by forcing him into it until you have thoroughly trained him how to drive. Then put on your check-reins and take him up gradually, elevating his head only to a natural position. In my opinion a colt should first be broken when about a year old, but never worked in a vehicle until he is at least five years of age; and, furthermore, I believe that a great many of our horses are almost ruined, or at least greatly decreased in value, by being broken too young. Any good, practical man, with good judgment, can break a colt; yet he must never get impatient, but bear in mind that a colt is like a child just learning his A, B, C. All colts, of course, cannot be handled alike, and, as perhaps you have already inferred from the preceding, should each be handled according to his nature, while the common sense of the trainer should indicate the most advisable course to pursue. The engravings, showing modes of training, will be readily understood, and hence require no particular description.



TRAINING HORSE IN ENCLOSURE.

Drawn and Engraved for the American Agriculturist.

Walks and Talks on the Farm.

New Series.—No. 22.

JOSEPH HARRIS.

"You have put in more crops," said the Deacon, "and made more improvements on the farm this spring than ever before." "That is so," said I, "and I am surprised at myself for so doing. Certainly I did not intend to do anything of the kind. The fact is we have been hoping for better times, and kept putting off and putting off everything that we were not obliged to do, until a feeling of desperation came over us, and we concluded it was not worth while to wait any longer. I imagine the feeling is a general one, and that far more work will be done on American farms this year than usual. This in itself will do much to accelerate the wheels of trade, manufacture and commerce, and give us better times."

"But the labor troubles?" We have been fearful of the grinding power of combined, soulless, incorporated capital; now we are apprehensive of the power of organized labor. The farmers of the country are interested spectators of the controversy, and will not be sorry if our great railroad corporations and coal and oil monopolists are taught to fear God and regard man. Some years ago the *American Agriculturist* well said: "Everybody is richer than anybody." The working people of the country represent enormous wealth—and create it.

"Who do you mean," asked the Doctor, "by working people?" "All men and women who do honest work," said I, "including doctors, lawyers, editors, engineers, ministers, and schoolteachers. So far as my observation goes, the hardest workers in this country are farmers, and especially farmers' wives. Happy is the man who has work to do—and does it—and certainly a farmer has plenty to do. What we should aim at is to make our work as efficient as possible. It has been said that a man should never do what a horse can do, and a horse should never have to do what a steam engine can do. And it is here where inventors, engineers, educators, manufacturers, and all who can aid us in doing more work with less labor find their usefulness. You will find that two of the important factors required to increase profitable production are capital and coal. The anarchists and socialists who drive capital from our industries are public enemies; the capitalists who combine to check the mining and distribution of coal, and thus enhance its price, are alike blind to their own interests and the prosperity of the country.

I want to see the steam-plow at work on tens of thousands of American farms, and as soon as the miners and railroads give us cheap coal, steam-plows will be rapidly introduced. Our seasons are so short that farmers almost kill themselves and their horses in trying to get their land plowed and crops planted. Clay land has to be turned when it is in just the right condition. If plowed when too wet it bakes, and if we are not quick about it a few day's dry weather, in our hot sun, makes the surface so hard that it requires a strong team to do the work, and if we plow deep and wide, we burst up great chunks, and have to do no little harrowing and rolling to get the land into fit condition for the seed. A steam gang-plow that would take half a dozen or more furrows at once, would do the work expeditiously and well, and if the land got hard it would simply be a question of good points, and a few more pounds of coal. There are plenty of young men capable of running the engines and plows.

In fact, our schools and colleges are turning out thousands of young men capable of doing any kind of work requiring brain and muscle. And in a great country like ours, there ought to be no lack of employment for them.

One of the best farmers in this neighborhood, eighty-five years old and still hale and hearty, was talking yesterday about these labor troubles, and he said that when he was a young man he hired out for six months at $9.50 per month, and took part pay in cloth, at $1.50 per yard, of the coarsest and poorest kind that would be considered dear now at fifty cents a yard. The farmer and he mowed sixty acres of hay. "They told me he would kill me; but," said he, with a smile, "I tuckered him out." This was in Saratoga Co., N. Y. Low as these wages may seem now, he saved a little money and came here and bought a farm, and has lived an honored and useful life amongst us for over sixty years. He was cutting the burdocks with a sharp hoe along the fences, and he struck at them with no uncertain aim. He brought down a burdock with every blow. "Will it kill them?" I asked. "Not if you just shave off the leaves," he replied, "but," holding up a plant, "if you cut an inch or two below the crown, they will not trouble you."

"I have a new idea," said the Doctor, "in regard to clover. We know that clover is the best of all crops to enrich the land, not only when the green crop is plowed under for manure, but also when the crop is cut for hay and little more than the roots are left in the soil for the following crop of grain. No satisfactory explanation of this well-known fact has yet been offered. Our grain crops require nitrogen in the form of nitric acid. Clover furnishes nitric acid, but how and why, we know not. Our soils often contain three or four thousand pounds of nitrogen per acre, but it is not in an available condition. We now know that a portion of this inert nitrogen is converted into nitric acid by the growth of bacteria. And it has occurred to me that decaying clover and clover roots in the soil are specially favorable to the growth of bacteria—the bactaria attack the inert nitrogenous matter in the soil and convert it into nitric acid."

In the *American Agriculturist*, last month, I said, "It makes no difference whether the soluble phosphoric acid is obtained from rock phosphate or from bones." "Perhaps;" replies a friend, "but don't apply the same rule to the other ingredients—potash and nitrogen." I did not. I said just what I intended to say and no more. I allude to this kind of criticism, because some one may answer the Doctor in the same way. To save them the trouble I may remark that, while the Doctor's suggestion may or may not prove to be the long-looked for explanation, one thing may be taken for granted—the Doctor knows exactly what he is talking about.

"Just now," said the Deacon, "I would rather know how to cure clover hay than to know whether the roots of clover do or do not favor the growth of bacteria. Musty clover hay is far too common, and the reason is that it is put in the barn before it is properly cured."

The Deacon is right. I have seen it recommended to cut clover in the morning and draw it in in the afternoon. Occasionally, with a light crop of over-ripe timothy such hasty hay-making may answer. But not with clover. A heavy crop of clover cut when in full bloom must have time to dry. It contains a great deal of sap, and the thick stems of the clover part with it rather slowly. The leaves of clover may be dry enough to rustle, while by twisting the stems into a rope, you can squeeze out the sap. In such a case the better plan is to put the hay into good sized, carefully made cocks, that will shed rain and let it "cure in the cock." In other words let the sap in the stems find its way into the leaves. This it will do to a considerable extent in one night. But some experienced farmers let the clover hay remain several days in cocks, or until it has had time to "sweat" and become dry again. This, in my opinion, is running unnecessary risk. If cocked for one night and then, after the sap has found its way from the thick stems into the leaves it is spread out for an hour or two, the moisture from the leaves evaporates and the hay can be drawn in with safety.

If hay has been wet with rain, it requires to be more thoroughly dried than when the hay contains no other water except what exists in the sap. And it is, also, in such a case that salt is useful. Sometimes farmers, when drawing in clover hay that they fear is a little too green, think they can save it by salting. This is doubtful. The salt does not quickly get at the sap inside the green stalks. But when hay is once cured and then is wet with rain, salt is undoubtedly useful—say three or four quarts to each ton or load. The real point in hay-making is to guard against exposing the hay, after it is cured or partially cured, to rain or dew. While quite green, rain or dew does little or no damage; but when it has been exposed to our hot sun or drying winds for a few hours, rain, or a heavy dew, will injure the quality of the hay.

My own method of curing clover, or part clover and timothy, is to cut in the afternoon and evening, and let it lie exposed, as left spread out by the machine, all night. The dew will not hurt it. The next morning, as soon as the dew is off, spread out with a fork all the thick masses, or lodged portions of the field. And then, as soon as the surface of the hay is dry, rake into thin windrows. Turn these windrows by hand and spread out a little where necessary. Then, in the middle of the afternoon, rake these windrows into large bunches and make the hay into cocks. We do not stop to gather up the hay clean. It is a waste of time and labor. Follow with a steel horse-rake and dump the hay as near the cocks as possible. We keep two rakes going and aim to do as much of the work as possible with the rakes. An intelligent boy on the rake will save half the labor of cocking. We rake all the land between the rows of cocks and as much as possible between the cocks themselves. The rakings are put on top of the cocks and at the same time we trim up the cocks and make them compact and snug. All the hay you rake up in this way is saved; all that is left is lost or greatly damaged. Old rakings, after being exposed to rain or dew for two or three days, are worth less than good straw.

Looking back for more than a third of a century, one of my mistakes has been in curing timothy hay too much and clover hay too little.

"Yes, I have made many mistakes. I have not summer-fallowed enough." At this remark the Doctor shook his head. He does not believe in summer-fallows. And I will admit that when agriculture attains perfection we shall not summer-fallow. One of the best farmers in the neighborhood last year had a fine field of Alsike clover. He cut it for seed and got seven bushels of seed per acre, which he sold at five dollars per bushel. He offered me some, and I, when looking at it under a microscope, found it was badly mixed with weed seeds. Driving past his farm the other day I found him plowing up the field with three horses and a jointer plow. "Are you going to plant it to corn or beans?" I asked. It is an elegant piece of land and there was a thick and heavy growth of clover. With a sharp, decisive ring to his voice and with a tinge of defiance, he replied: "No, I am going to summer-fallow it." "Good for you," I replied. He seemed surprised. He knew I "wrote for the papers," and expected I would laugh at the old-fashioned summer-fallow. His voice lost its sharpness, and with a sort of apology he said: "You see, there are some weeds in it, and I am bound to kill 'em." He is an honest man and does not like to sell clover seed mixed with weeds.

Perhaps you can clean land without summer-fallowing it. I can only say that if I had my life to live over again, I would summer-fallow more. I would do as my neighbor is now doing; put three good horses on a plow, with a jointer, and aim to do good work in plowing. Following immediately, while the freshly turned up soil is moist, with a roller and then with a harrow, and then roll again. Later, for killing thistles, the best tool is a good gang-plow, with three horses, running it as deep as the sod will let us. It does not hurt anything to turn up a little of the partially decayed sod.

I have a piece of rich land that I am going to sow to millet. I expect a tremendous growth, and I believe the millet will completely smother the weeds. "Why do I not summer-fallow it?" Because I do not wish to sow winter wheat—and I want hay. The millet makes excellent hay when well cured. You say I am inconsistent. Not at all. Circumstances alter cases. A farmer must always do his own thinking. Summer-fallowing is good. Millet is good. Sometimes one is best, and sometimes the other.

A Country House Costing $3,500.

ARTHUR L. VALK, ARCHITECT.

This design shows a country house intended as a residence all the year round, and to be built for convenience as well as external appearances. The frame is constructed in the balloon style, with the boarding laid diagonally. The clap-boards on the outside, as high as the first story, are placed upright; on the second, they are horizontal. The inside arrangement of the rooms is very complete; in every detail the dimensions are readily seen in the plans. The connection between kitchen and dining room is perfect, and a spacious butler's pantry is conveniently placed between. The kitchen is intended to contain a large range with boiler, sinks and a dresser. All rooms throughout the building are well lighted. The house is to be heated by a hot-air furnace, but the parlor and family room have each a large open fireplace, the beauty and usefulness of which will be appreciated in early spring and late autumn, when the weather becomes too cool to be without fire, yet is not sufficiently cold to require furnace heating. The second story has four comfortable bed-rooms, with an ample supply of closets, and a bath-room seven by ten feet. The top story will admit of the construction of three good-sized rooms for servants' accommodation, or the floor may be left clear and used for storage, as the owner may desire. The house, at the estimate given in the title, is shingle-roofed; at an extra cost of about three hundred dollars, slate may be substituted, the frame being amply strong to sustain the increased weight.

VIEW OF A HANDSOME COUNTRY HOUSE.

Home-Made Incubators.

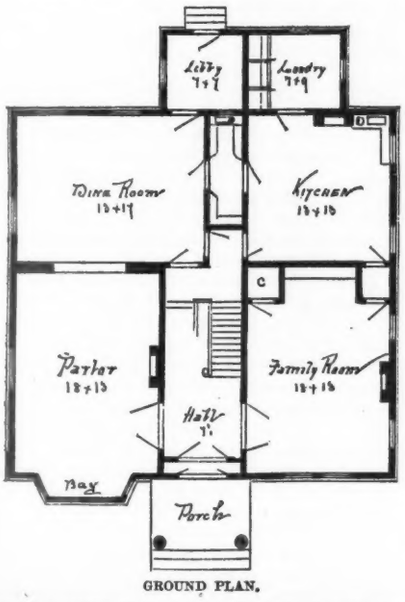
Though there are good incubators in abundance on the market, if we accept the offered testimony for evidence—and some we know by personal experience are very good—yet there are simple plans by which any one with a little gumption can make his own, and infringe nobody's patent.

Persons situated away from towns where incubators are made or sold, and away from the lines of railway or express, may construct incubators for themselves, with only the help of a tinsmith and a carpenter, which will do excellent work. The plan recommended by Mr. P. H. Jacobs is as follows:—Have a closed tank made by a tinner, of galvanized iron or zinc, measuring fifteen inches wide, thirty inches long and twelve inches deep, having also an inch tube eight inches long rising from the top, and a tube of the same length for a brass faucet near the bottom of one end. Now prepare a wooden box of inch stuff tongued and grooved, which shall hold the tank, the sides and ends of which shall extend nine inches below the bottom of the tank which is fastened in the top of the box by four iron rods passing crosswise under the tank. It is important that there should be several rods to support the bottom of the tank level, as the weight of water will be considerable, and the tendency of the bottom is to sag or bulge. Immediately under the tank the egg-drawer is placed. This is three inches deep and has a bottom of muslin stretched tight from side to side and supported upon thin slats of wood let into the ends. The cleats upon which the egg-drawer runs and is supported, must be fastened in, and a three-inch opening made in the end opposite the faucet, close under the tank, for the drawer to slide in and out.

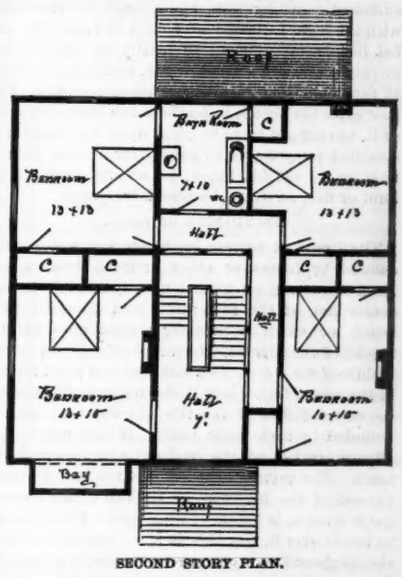
The arrangement, as so far completed, is set upon a platform just six (or better eight) inches wider and longer on all sides than the tank. The tank being fifteen by thirty inches, the platform will be six plus fifteen plus six, equals twenty-seven inches wide, and six plus thirty plus six, equals forty-two inches long. The tank-box, with the egg-drawer space and the open space below, which is used as a ventilator, is placed in the middle of the platform and fastened there securely, after boring four one-inch holes and setting in tin tubes to come up within two inches of the egg-drawer.

This platform is the base or bottom of a tight box to be built around and six inches distant from the tank on all sides. The egg-drawer shuts flush with the outside of this case, and the space between the two cases through which the drawer slides is boxed. The boards are nailed to cleats or posts in the corners, and the top is put on by screws so that it may be removed if necessary. The whole space between the tank case and the outer one is now filled with dry sawdust, and it is best to take some pains and obtain spruce sawdust as being nearly odorless. The ventilator space below the egg-drawer is to be filled with sawdust to near the top of the air tubes, and six inches of the front of the egg-drawer is also packed. This apparatus is set up upon blocks or legs, so that the air has free access beneath, and is thus completed. In use the tank is to be filled with boiling water and the temperature carefully watched, the thermometer being laid in the egg-drawer. It will be twenty-four hours before the incubator will have an even temperature. If it is found to be below one hundred and ten degrees, a little water may be drawn off and hot water added. After it is held stationary at about this temperature for a day or two the eggs may be put in and they will bring the temperature down to the normal heat of the hen's nest—namely, one hundred and three degrees. A pan for water is placed in the ventilator space and is emptied by a rubber tube siphon, and the water renewed daily; besides it is well to have one or two moist sponges laid upon the eggs in the drawer, as they indicate the amount of moisture present. The egg-drawer must be taken out once every day and allowed to cool down to seventy degrees, and while the drawer is out it is well to close the opening to prevent cooling the incubator. Before returning the drawer the eggs must be turned half over, and to know this they should all be marked on opposite sides. The last week they should be sprinkled with tepid water daily—but this is not necessary when the sponges remain moist.

To maintain the temperature, all that is required is to draw off a pail of water and add one of boiling water as often as may be necessary. In cold weather and in an exposed situation this may need to be done three times a day; but under ordinary circumstances once or twice a day is quite sufficient.



GROUND PLAN.



SECOND STORY PLAN.

The changes of temperature in this incubator go on very slowly, the influence of a kettle of hot water not being noticeable for three or four hours.

Laws Affecting Field Sports.

GEORGE PUTNAM SMITH.

As the country becomes more thickly settled and the land is more generally cultivated or enclosed, the liberty which the sportsman has hitherto enjoyed of hunting or fishing where he chose is being restricted, and a knowledge of the legal limits of private land, of the rights of its owner and of the law of trespass, becomes more and more important. As game becomes scarce—both because its haunts are destroyed by the spread of agriculture, and its increase is prevented by the increasing number of sportsmen, the necessity for laws regulating the time and manner of killing or capturing it, becomes more and more apparent.

Although the English doctrine of property in game probably will not be accepted by American courts, yet if the exclusive right to take game in certain places is lawfully acquired, and if such game is maintained and preserved at the cost and for the pleasure or profit of those who have obtained such exclusive right, the rightful owners will be protected, not only by statutes which impose penalties for entering on posted lands, but, in the absence of such statutes, by increased damages awarded by courts in cases of trespass.

TRESPASS.

Wild beasts, birds, and fishes, which have no owner, become the lawful prize of anyone who can kill or capture them, often inhabit land or water that is the subject of private ownership, and, by entering thereon without permission in search or pursuit of game, the sportsman becomes a trespasser. Not only are there in this country large tracts of unenclosed land belonging either to the State or to private owners, who do not exclude the sportsman therefrom, but the "custom of the country" in most localities is to permit him to enter on any "unposted" land in pursuit of game, subject only to liability for such damage as he may cause to the land itself. In regard to enclosed and cultivated lands such license by custom has been denied.

Upon the whole, it may be said that the sportsman cannot claim any legal right to enter on private property in pursuit of game, based on the custom so to do. The right to hunt or fish on land or water may be founded on custom, prescription, grant, or license. A right by grant may be given by the State as the owner of game or fish in public lands or waters, or by the private owners of real property. The right by grant requires a writing which, as the right to kill and carry away game on land is a "license of profit," should be based on sufficient consideration, and should be executed with the legal formality of a deed of land. A verbal license is sufficient to justify an entry upon private property to shoot or fish, and it is good until revoked. But if the sportsman remain on the land after his license to be there has been revoked, or if, having got leave to come upon the land for a specified purpose, as to cross over it, or to gather nuts, or to eat his lunch, he should proceed to hunt or fish, he would become a trespasser.

BOUNDARIES OF LAND.

The limits of private lands are not necessarily defined by fences or other artificial boundaries. Land bordering on a road usually extends to the center line of the road; and land bounded by a brook or small fresh-water stream goes to the thread of the current, which may or may not be the middle of the water. In a small lake or pond it goes to the center line. But if the water is affected by the ebb and flow of the tide, the adjacent land is bounded by high-water mark. If the water is a lake or great pond, the land extends to low-water mark. The private ownership of the land forming the soil of the highway, or the bed of an unnavigable stream, is subject to the right of the public to travel over it, but this is all. The hunter who shoots game in a road, or who stands by a farmer's fence and denounces him for not permitting access to his fields, or who, while walking along the road, sends his dog into the field to flush the game there, so that he may shoot it as it flies or runs across the road, or sits in his boat between the land and the thread of the stream and shoots ducks swimming or flying there, is guilty of trespass. The right of the public to fish in a stream, like that of shooting upon land, depends upon the question of ownership. If the land which forms the bed of the stream is owned by any one, then, although the stream is wide and deep enough to afford free passage for boats of any size, it is merely a highway on which the public have only a right of passage, which must be exercised with due regard to the rights of the owner of the river bed.

PROTECTION AGAINST TRESPASSERS.

The remedies of a land-owner against a trespasser are—unless there be statutory remedies for trespass—ejection of the trespasser from the land, and suit against him for damages. If the sportsman enter upon land after receiving notice not to do so, he not only greatly aggravates the offense, and thereby incurs the risk of having to pay substantial damages; but in many States wherein a special form of notice commonly called "posting" is prescribed by statute, he is also in danger of fine, imprisonment, or other penalty. If two or more sportsmen are in company they may all be guilty of a trespass, although only one of them actually went upon the land. Thus, where two brothers were riding in a wagon on a turnpike road, and one of them got out and shot a hare in the adjoining field and brought it to the other, who had remained in the wagon, both were held guilty of trespass.

PROPERTY IN GAME.

Game in its wild state properly belongs to nobody. It is only when it is reduced to possession, or killed, that it can be called property. A qualified property in game, even in its wild state, exists at common law. Property, *ratione soli*, is the common law right which every owner of land has to kill and take all such animals, *ferœ naturæ*, as may from time to time be found on his land, and as soon as that right is exercised, the animals so killed or caught become the absolute property of the owner of the soil. Aside from the question of trespass, if a man kill or capture a wild animal it becomes his property; and depriving him of, or injuring it, can be punished both civilly and criminally. But until the game is actually killed or captured, the sportsman has no property in it, even though he may have wounded it or be on the point of catching it, and any one else has a right to "come in at the death" and sieze the game if he can. But, although there is no ownership of game until it is actually reduced to possession, it has been decided in England that an action will lie against one who intentionally frightens away game from another man's land or water.

GAME LAWS.

The law of field sports in America is based upon certain statutes adopted by the several States to prescribe the times wherein and the methods whereby game may be captured, and also on certain principles established by decisions of courts. The purpose of the American game laws is to protect and preserve the game for the common benefit, by prohibiting its destruction at certain times and by certain methods. The right to take game is generally granted to all who can obtain permission to enter on the property which it inhabits. The power of the several States to make laws is limited by the Constitution of the United States, which, among other things, declares that the citizens of each State shall be entitled to all the privileges and immunities of citizens in the several States. It has been held that the State is owner of all wild game within its territorial limits.

THE USES OF LIME.—A barrel of lime is indispensable about the poultry house. A thorough dusting of dry, air-slaked lime all over the inside will keep out vermin and sweeten the air. It also destroys the parasitical worms and their eggs, which are voided in the droppings, and so prevents gapes, the worst of all diseases of young chicks. As long as the manure is kept dry the lime does no injury to it, but rather helps to keep it, because it absorbs moisture and preserves it from decomposition—absence of moisture being unfavorable to any chemical change. A barrel of plaster in the stable will be equally useful, as it absorbs the ammonia, and keeps the air pure and free from the pungent odors which attract flies and annoy the horses. The floor should be well dusted with it once a day.

Town Sewage and Irrigation.

A. B. ALLEN.

When the town site is higher than the adjacent land, its sewage may be easily and cheaply applied to the purpose of irrigation at a large profit, and greatly to the benefit, and health also, of the town—thus securing a double advantage in its adoption. Town sewage is frequently used for irrigation in many parts of Europe, and one of its most successful examples I found when traveling there in 1867, was on the Cragentinny meadows in Scotland, about a mile north of the City of Edinburg. The ground descends all the way from the city to the meadows, which are nearly flat, and lie only a few feet above the tide-water of the Frith of Forth.

Mr. Andrew Bryce, the superintendent at this time of these meadows, informed me that they usually began to cut them about the 10th to 13th of April. It must be recollected that the climate of Scotland here is much wetter and milder in winter than in our Northern States, and the summers cooler, so that grass is kept growing generally more or less during the winter, and comes rapidly forward early in March. These meadows yield three to four cuttings, about six weeks apart during the season, dependant something upon their being more or less irrigated. The grass is a natural species, and never runs out. It is generally sold green as fast as cut, for the forage of the town horses. Its weight then is ten tons per acre—thus, three cuttings during the season would produce thirty tons, and four cuttings, forty tons. When dried for hay the grass shrinks to one-fifth of the green, making only two tons per acre.

Mr. Morton, editor of the "English Agricultural Gazette," gave a report in 1868 of the application of thirty thousand tons of London sewage. As the climate is much milder there than in Edinburg, five cuttings were made during the season, the green grass averaging sixty-one tons per acre, but how much when dried he did not say. Giving the weight of grass when green is a very indefinite method of showing its value, as the weight varies according to its being more or less wet from the irrigation, which might possibly vary all the way from twenty to over eighty tons per acre. I have seen this last enormous figure stated as a yield per acre in some part of Europe, but cannot now refer to the printed report of it. This reminded me of the ridiculous braggart reports occasionally given in some agricultural papers of the United States, by ambitious Indian corn growers, of the weight they had produced per acre of this product.

Every town and village ought to have a perfect system of drainage for its sewage. Where this cannot be immediately applied to grass and cultivated crops, it should be emptied into a reservoir and sufficient peat or muck added for disinfection, and putting it in so solid a condition that it can be shoveled up and carted away for the fertilization of any land when needed.

Fashionable summer resorts are often made very unhealthy for want of proper sanitary measures. People go from the city to the country to get a pure air, and for the benefit of their health. Instead of this, they frequently find it so tainted, especially in yards, wash rooms, and water closets, as to generate fever and other dangerous diseases.

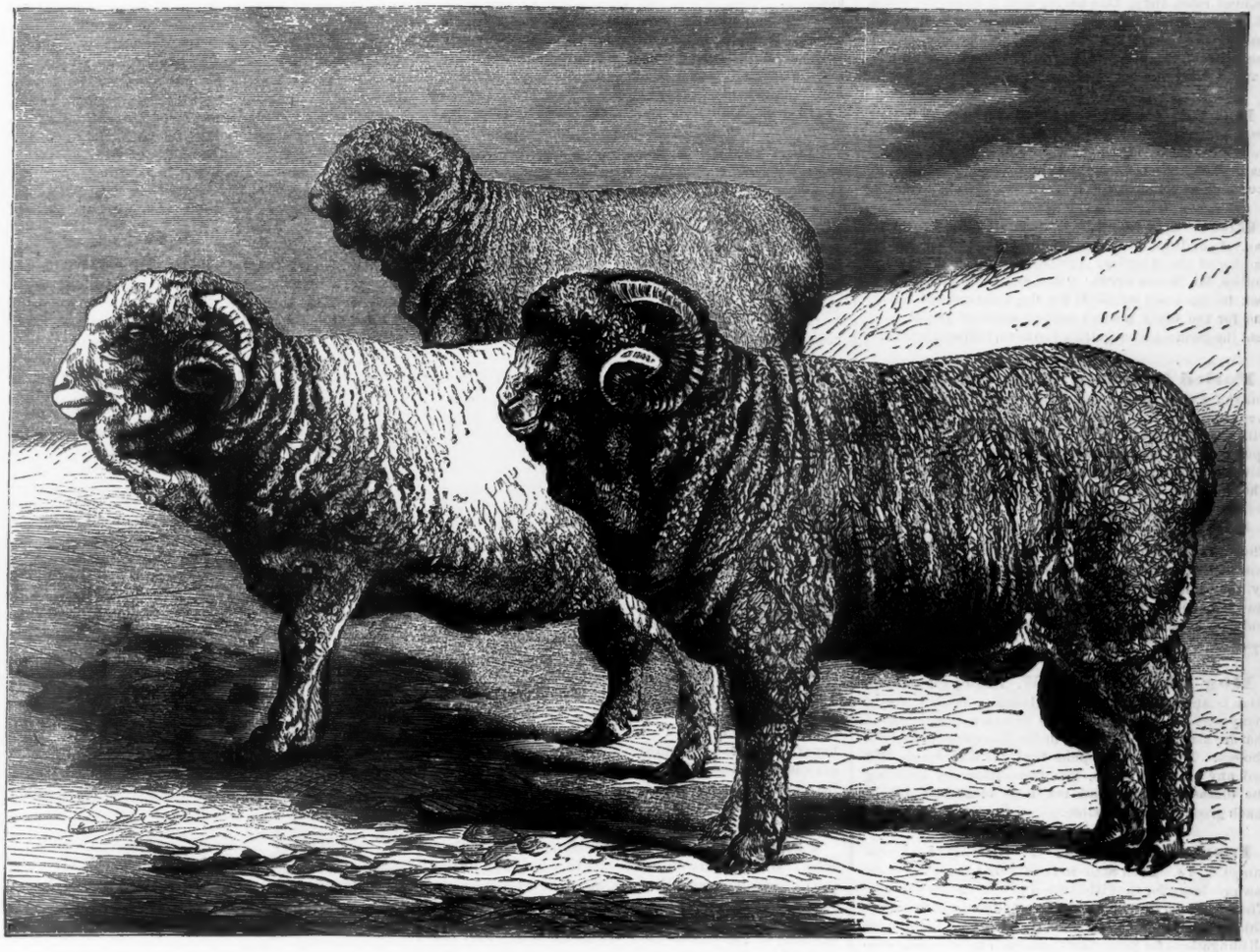
One cannot be too careful of the water that supplies the beverage of tables. If coming from a well near a barnyard or other foul place, reject it, as drainage from these may have leaked into it in sufficient quantity to render it very unhealthy. Spring water is also thus affected, although it may taste sweet and look perfectly pure. The only safety for every household, whether in country or in town, is to dispose daily of all foul stuff, whether liquid or solid, which accumulates on or near the premises, poisoning the air and breeding disease.

Negretti Merino Sheep.

We have had the Spanish Merinos in this country, ever since the famous importations of Col. David Humphrey, of Connecticut, Hon. Wm. Jarvis, and others. The blood of Humphrey's stock was kept pure through the instrumentality of Stephen Atwood; then the sheep were increased and multiplied principally by the Vermont farmers. These were of the Infantado family, but they were interbred with those of the Paular, Negretti and other families of the Jarvis and other importations, and thus the American Merino has a family tree of many branches.

George the Third, by favor of the then king of Spain, obtained in 1791 a flock of pure Negrettis, bred them at Kew, near London, and had for several years regular sales of rams. The Merino proved little adapted to the wet climate of England, and the flock finally came into the possession of the late T. B. Sturgeon, of Gray's Station, Essex. Having business with the sons of Mr. Sturgeon, a few years ago, the writer was surprised to find in their possession a flock of large, well-formed, vigorous Merinos. They have been bred, so far as we are aware, without out-cross, but bred with great discrimination. The interesting picture herewith presented, from the pencil of the first animal draughtsman in the world, shows the sheep as they are—not squared and rounded and wrinkled up to please some breeder's notion—taken from animals of this flock, a source of pure blood, by the way, which American breeders seem to have hitherto singularly neglected.

The most extensive and noteworthy importation, and the one which gave form and character to the American Merinos, was that of the Hon. Wm. Jarvis, our Consul at Lisbon, in 1809 and 1810. This consisted of 3,850 sheep of the flocks of Paulars, Negrettis, Aqueirres and Montarcos of Spain. Of this importation, 1,500 came to New York, 1,000 to Boston, and the remainder to Philadelphia, Baltimore, Richmond, Portland, Portsmouth, etc., so that the stock was widely distributed.



NEGRETTI MERINO SHEEP.

Engraved after Weir for the American Agriculturist.

Preventing Swine Diseases.

Although swine diseases made such havoc during the last half of 1885, it is safe to assert that farmers are taking no more pains now to prevent an outbreak than they have done in the past. The only commendable measures are those of precaution, not of cure. We have been able to prevent disease among our swine for more than a dozen years, but have never been able to cure a hog sick with swine plague. Our swine have repeatedly nosed, through the fence, hogs removed but a few hours from death. Our experience, therefore, convinces us that swine diseases can be prevented, and that this can be accomplished, not by keeping the germs away from the swine, which is impossible, but by keeping the hogs in such a high state of health that they are able successfully to combat against the causes of disease. Swine are subject to the same physical laws which rule over horses, cattle and sheep, and the greater prevalence of disease among swine is proof only that they are oftener deprived of the conditions of health.

Disease oftenest finds its way into the body of the hog through the drinking water. It is a common opinion that a hog prefers filthy water. This is not correct, and if it were, it would be only the greater reason for providing them pure water. A hog does not like filthy water, but it will drink water that other animals will not; and simply because it will, and will bathe in its drinking water rather than not bathe at all, it is allowed or compelled to drink water that no sane person would doubt could fail to produce a diseased condition of the body in the case of any animal. We have found that when a hog is given his choice between pure and impure water he will take the former.

It is true that there is no better dry food for hogs than corn to produce fat. But it is equally true that no animal should be fed almost exclusively upon one article. Variety of food is essential to the health of all animals, and especially that of the hog, so nearly omnivorous. Throughout the season he should have a variety of grasses. Anything else that can be given to increase the variety should be supplied. When off pasture, corn may well be the first article in the ration; but we are careful to give bran, oats, potatoes, rye, turnips, pumpkins—anything cheaply raised to add variety of food.

Hogs, more than any other farm animal, are diseased from faults in their sheltering. The greatest fault is not lack of shelter but lack of ventilation. Hogs are apt to become over heated in their shelters, and they rapidly foul the air. Hence the shelter should have openings all around under the eaves, and where the hogs are in lots they should not have any litter. Hogs are oftener made too warm in winter than not warm enough. But they should have protection from the sun in summer. We find nature's provision (trees) the best; but where these are lacking sheds of boughs or boards will answer. It will be seen that all measures for the prevention of swine diseases are summed up in rational treatment, and there can be no doubt that it will be effective if attended to in season.

OUR BASKET.

Clubs can at any time be increased by remitting for each addition the price paid by the original members; or, a small club may be made a large one at reduced rates, thus: One having sent 5 subscribers and $6.00, may afterwards send 5 names more and $4.00, making 10 subscribers at $1.00 each; and so for any of the other club rates. Subscriptions can begin at any time, as every number of the paper is complete in itself.

Bound Copies of Volume 44 (for 1885), are now ready. They are uniformly bound, in cloth, gilt backs. Price at this office, $2. If sent by mail, $2.30. We can usually supply at same rate any of the previous volumes, *i. e.*, from volume 16 to 44 inclusive.

Oiled Clothes.—Wm. A. Neads, Ontario, Can. In addition to the instructions given in the March number of the *American Agriculturist* for making oiled clothes, Mr. Neads writes: "Add one-half ounce of beeswax to the quart of oil if for the light-colored finish, and for the black, a small tablespoonful of tar to prevent the garment from getting too hard, stiff and brittle."

Polled Cattle.—J. Baum, Clinton Co., Ill. Bulls of Polled Angus and other thoroughbred polled breeds produce hornless calves when bred to native cows, with very rare exceptions. When such bulls are crossed upon cows of thoroughbred breeds that have horns, the calves are liable to come with small or deformed horns. The polled breeds are quite as prolific as others.

A Benefit to Many.—Mrs. Mattie Ray, Choteau Co., Montana, writes: "You may not be aware how many persons besides its subscribers are benefitted by the *American Agriculturist*. After our family has read it I send it to my mother and sisters in England, and they in turn send it to our brother and his wife in South Australia."

Hog Cholera.—Jas. W. Thompson, Hawaiian Islands. Not only on the Hawaiian Islands, but in many parts of America, various diseases among swine that are alarmingly fatal pass under the common name of cholera. The only treatment thus far discovered, that had any practical value, was prevention—by isolating the diseased, keeping all the hogs clean and fed as much green food as possible.

Insolvent Laws.—F. G. Kinyon, Lycoming Co., Pa. Each State in the Union has an insolvent law providing for the distribution of the debtor's estate. These laws vary in different States, and many of them provide for the discharge, as in bankruptcy, of the debtor from all obligations for prior debts, generally upon certain conditions, as in New York, by the consent of two-thirds of his creditors when the assignment is voluntary.

Wire for Binding Grain.—Geo. T. Kifer, Woodbury Co., Iowa. Farmers are often troubled with grasshoppers and crickets cutting the twine used for binding grain. There is no remedy by means of solutions that will keep insects off the twine that would not be dangerous to the animals eating the straw. The best remedy for these evils is the use of wire for binding, though it is somewhat dangerous if the straw is to be passed through a cutting box before it is fed.

For Cows Sucking One Another.—A. Little, Steuben Co., N. Y., writes us that he had a yearling heifer that was in the habit of sucking an old cow. To prevent this he took one part of carbolic acid and two parts of pure glycerine, mixed the two together and applied it to the cow's udder every morning as soon as milking was over. This he continued for a month or so, and it cured her completely.

Sick Pigs.—E. Worthington, Ontario, Can. The symptoms of kidney worms are a weak back, and partial paralysis of the hind legs; but it would require a careful diagnosis from personal examination for any one to prescribe for a sick pig. We would advise every farmer who raises pigs to have in his library some good work on swine and their diseases.

Pigeon Cholera.—E. A. Wyatt, Dickson Co., Tenn. It is not a safe practice to prescribe for your pigeons from a short, general description of their complaint. It will be well, however, to isolate the unhealthy members of the flock, clean and disinfect the roosting places and nests, whitewash everything and give little corn in the feed. Pleasure, profit and intelligent management come from studying books and pamphlets on the treatment of your pets. "Wright's Practical Pigeon-Keeper," price $1.50, is a good work.

Stocking a Stream with Trout.—Alex. Murray, Clearfield Co., Pa. To be successful in stocking streams with trout the water should be clear and cold. Spring holes that never reach a temperature above sixty degrees in the warmest days of summer are a desirable feature. If the oldest inhabitants of the neighborhood cannot remember when trout abounded in the small streams it would be about useless to stock them, and if tanneries are located on the stream, trout will not live in them. Neither do trout like sawdust in their gills.

How many Acres to a Cow?—C. E. White, Warren Co., N. J. With good management, a farm of sixty-five acres should supply all the feed for a herd of ten dairy cows. A larger herd could be carried with very high farming and a well-regulated system of soiling. There should be at least twenty acres devoted to grass, ten acres for house-lot, barnyard, garden, etc., leaving thirty-five acres for general crops. The general character of the land must determine how much feed can be raised, and this, again, must determine the number of cows that can be carried.

Lice on Horses.—S. R. A., Jefferson Co., Ky. Having failed with kerosene, tobacco and sassafras, we would advise you to try Buhach or California insect powder. But the trouble probably is that the stable is badly infested with the lice, and no remedy applied to the horses will be more than temporary. Give everything about the stable and all the cracks a thorough cleaning and a full dose of carbolic acid diluted with water and keep the horses well brushed. See that all the cattle that come in contact with the horses are free from vermin. Constant cleanliness is the sure remedy.

New York State Trotting Horse Breeders' Association.—This is the name of a new organization at Rochester, having for its object—as stated in the circular received—the diffusion of more knowledge on the subject of trotting horses bred in New York State. Invitation to join the association is particularly extended to drivers, owners and breeders of trotting horses. There is to be a three days' meeting in September of each year, to compete for stakes offered by the association. The initiation fee is ten dollars, and the list of officers contains the names of many reliable gentlemen who are interested in the trotting horse.

Fishing.—Stephen V. Whitney, Hillsdale Co., Mich. It is not very often the case that men who live in towns become expert fishermen, but there are some hints that may be useful to them. As a rule, fish bite best on a still, cloudy day. The bait must be chosen according to the kind of fish you are after, the season of the year and the location. A good plan is to watch some successful old fisherman and imitate him closely. Tell him how much you admire him and he will be sure to let you into all his secrets. No fisherman can withstand flattery; but the great secret of luck in fishing is to have just the right kind of bait.

Quack Grass.—Geo. N. Blair, Winona Co., Minn., states, that farmers in his locality are beginning to be troubled with Quack, or Couch, or Quitch grass. He asks: "Are Quack and Bermuda grasses one and the same?"—No. Quack grass is *Triticum repens*, a coarse grower with its flowers in a single spike, like wheat. Bermuda grass, *Cynodon Dactylon*, is a comparatively fine grass, with its flowers on slender spikes which are borne at the top of the stem, four or five together. In their botanical relationship they are very far apart. "Does quack go to seed at the North?"—Yes, while Bermuda has not been known to bear seeds in this country; though it flowers freely, it ripens no seeds. "Is is better for pasture than other grasses?"—Those who have tried quack, as a pasture, speak highly of it, and the cattle are very fond of it. That it is superior to all other grasses is a claim we never met with. However good it may be as a cultivated grass, its character as a weed should make one hesitate before sowing. "It has appeared here as a grain weed, and a great nuisance to our farmers; how do Eastern farmers deal with it?"—The only way is, to make a business of getting rid of it—summer-fallow, plowing, harrowing and raking, until the last bit of root is taken out. Burn the roots, as they will grow after long drying. The quack rake is a long rake with long iron teeth, and is dragged by the workman with its long handle resting on his shoulder. A horse rake might be arranged to do the work.

An Enemy to the Water-Cress.—Garret V. Hering, Bergen Co., N. J., sends us specimens of "a pest" which is destroying a water-cress bed of one of his neighbors. The "pest" proves to be one of the caddis-worms, the larva of a winged insect related to the dragon-fly. The "worm," so called, spins a case which it covers with bits of fine gravel, small sticks, etc., to protect it from fishes and other enemies. Several of these larvæ, with a perfect insect, were figured in April last, page 164. These worms are highly prized by anglers as a choice bait, and have heretofore been regarded, so far as this goes, among the useful insects. That it is capable of any injury is new to us. It would not be very difficult to kill the insects were it not for the plants, but whatever is used for this purpose must not injure the water-cresses. We should try the Pyrethrum powder—especially the California kind, called Buhach. A strong infusion or tea of this, mixed with water, might be tried on a small scale. It probably would not injure the plants, and an experiment can only tell if it will destroy the "worm." If any have had experience with the caddis-worm as an enemy to the water-cress, we hope to hear from them.

The Asparagus Beetle.—J. W. Hines, Kent Co., Md. The insects you sent are the Asparagus Beetle, *Crioceris Asparagi*. This European insect made its way to this country about 1860. It was so destructive on Long Island that, in a few years, it caused in a single County, a loss of fifty thousand dollars, and it was feared that asparagus culture must be abandoned on account of this new enemy. In a few years after the advent of the beetle there came relief in the form of a small, black, parasitic fly, which, by depositing its eggs either in the egg or the larva of the beetle, so reduced the numbers of that insect, that it soon ceased to be formidable. "But," our correspondent may ask, "what shall we do who have no parasitic fly, and want asparagus?" Several remedies have been proposed, the most sensible among which appears to us to be, syringing with water hot enough "to make the grubs loosen their hold, yet not of a heat to hurt the leafage." No exact temperature is given, but it is said: "The water should not be of a heat above what can be well borne by the hand." If all the larvæ are not brought down by the water, a smart tap on the shoot will dislodge them. It is advised to sprinkle the fallen insects—to prevent their return to the asparagus—with dry soot. Probably ashes, or even coal ashes, acting mechanically, would answer the same purpose. Paris green or London purple mixed with plaster, and dusted over the plants while wet with dew, is also an effective remedy.

Canning Fruits and Vegetables for Market.—D. Jennings, Labette Co., Kans., wishes us to describe the processes for canning fruits and vegetables. The outfit required is very simple; this consists of a large wooden vat, in which water can be rapidly made to boil by means of steam; this vat is provided with a basket made of small iron rods, hung by a tackle to a crane. This basket is to hold the cans, and is so arranged that it may be promptly lowered into and raised from the water. The cans are made on the place by expert tin-workers; they have at one end—the top—a circular opening to admit the article to be canned, which is provided with a cover or cap which may be quickly soldered on. Whatever contrivances will facilitate the paring, or otherwise preparing the fruits, etc., are provided, but a large share of this work is done by hand. The cans are filled with the fruit, shaken down as solidly as possible, and then filled up with weak syrup or other liquid, which drives out all the air. The next step is to boil the cans in water for a shorter or longer time. The iron basket is filled with the cans, and lowered into the water in the tank, where the boiling is continued for a few minutes or for several hours, more or less, according to the article under treatment. Each fruit or vegetable, in order that it may keep, requires to be "processed," as the boiling is called, for a given time—how long this shall be, appears to be the chief secret of the business. In some cases the article is processed the required time and allowed to cool, when it is finished. In other cases—green corn, for example—the caps of the cans are provided with a vent hole and, with this left open, they are boiled for two hours; this vent hole is then soldered up while still hot, and they are again boiled for two hours. This is a general idea of the method, in which there is a variety of detail. It is a trade which must be learned, and cannot be picked up. If one wishes to engage in it on a large scale, he should engage a skilled and competent foreman.

Potatoes for Horses.—S. B. M. asks if potatoes can be fed to horses. Certainly, especially towards spring, an occasional feed of a half peck acts as a decided appetizer. A neighbor, who kept several valuable horses, informed us that he used no other remedy, when he discovered that a horse was troubled with worms, than a few feeds of potatoes.

Dissolving Bones.—J. E. Reed, Buncombe Co., N. C. The most convenient mode of dissolving bones on a farm is to place them in thin layers in a heap of fresh horse manure. If this is not feasible, they may be packed in hogsheads with unleached hard-wood ashes, and kept constantly moist, but not saturated. The casks should be under cover to prevent the rain falling into them. By adding some crude potash from time to time, the process may be hastened considerably, as also by first breaking the largest and hardest pieces of bones with a sledge. We have reduced many bones by placing them in the manure of a hot-bed.

Cactuses.—Mrs. T. M., Monmouth Co., N. J., asks us at what time "the cactus" blooms. "The cactus" would apply to a single species, while there are scores in cultivation. Those in general cultivation are of two sorts, winter blooming and summer blooming. The winter flowering kinds are but few, the well-known "Crab's Claw Cactus" (*Epiphyllum*) being the most prominent. These are to be kept dry all summer and will bloom in early winter. The summer blooming species, those with large, brilliant flowers, are kept dry or nearly so during the winter, but are given water in the spring, when they will start into growth and flower, making magnificent ornaments for the veranda.

Quantity of Ashes per Acre.—Several subscribers wish to know how large a quantity of wood-ashes may be applied to a crop with safety. We have never heard of a case in which too much has been used; the trouble generally lies in the other direction. One hundred bushels per acre will do no harm, but smaller quantities may be more economically applied, especially on porous soils. The crops cannot take up more than a certain amount of potash—which is the most valuable principle contained in wood-ashes—in a certain time. If more is applied, a part of it passes through the soil, and beyond the reach of the roots. The most efficient and economical mode of using ashes is to apply twenty to twenty-five bushels per acre, at two or three different times during the growing season.

Fruit Culture in the North-west.—Geo. H. Hopkins, Sanborn Co., Dakota, writes us, the main cause of failure in the North-west, is the indiscriminate planting of varieties, without regard to their adaptability to the climate. As the only reliable apples, he considers the following as hardy, viz.: Oldenburg, Totofsky, Weathy; and of crabs, Whitney's No. 20, Transcendant and Hyslop; of plums, he recommends the Wild Goose; of cherries, Morello and Richmond; of blackberries, Snyder and Briton; of raspberries, Turner and Gregg; of strawberries, the most popular kinds are Wilson, Chas. Downing, and Crescent. Strawberries must be well mulched in winter. Raspberries and blackberries should be laid down and covered with soil. Then the "Jack Rabbit" has to be watched, else he will eat the bark off the fruit trees. But with a little care, no one need be without fruit in Dakota.

Fruit and Flowers at the Same Time.—W. H. Snippen, Jefferson Co., Ky., asks if we have ever known an apple tree to put forth a second crop of blossoms, while the fruit of the first crop was ripe, or nearly so? It is not an unusual thing for flower buds, prepared for next season, to be forced into bloom prematurely in the season in which they were formed. Strawberries, frequently in a warm and moist autumn will flower, and even ripen fruit. This is, of course, so much loss to the proper crop of the following spring. In the case of the apple trees, we have noticed they have been, so far as we recollect, of the "Early Harvest" variety; and the few scattered flowers produced about midsummer were more or less double, giving rise to the newspaper report of remarkable apple trees that produced roses. The recurrence of apple blossoms out of season is interesting and curious, but it has no practical bearing upon fruit culture.

Hog Cholera.—L. Herrick, Clay Co., D. T. It is no uncommon thing for a disease to become epidemic among hogs that are the descendants of those that for generations have been bred in confinement and obesity. If a race of men were bred as fat as the specimens to be found in museums, they, too, would probably develop cholera or some other epidemic disease. This plethoric state of flesh is abnormal, and a disease that must affect the vitality of the animal, rendering it an easy prey to unhealthy surroundings. Different States and the general government have employed various commissions, made up of scientific men, to define and find a cure for hog cholera, but thus far without any favorable result. Agricultural colleges, so far as we know, are not investigating the subject. Those best posted on diseases, generally refuse to prescribe for sick animals without having the opportunity of a personal examination of the patient. Any other practice looks much like quackery.

Mending Rubber Boots and Shoes.—J. W. A., Montrose, Pa., asks us to tell him "how to make a cement for mending rubber boots, etc."—There are many small jobs that one can do himself and make a considerable saving, but mending rubber rubber boots, etc., is not among them. Mending of this kind is needed but a few times during the year, and if one should prepare the cement and use it successfully, he would most probably find the next time he needed it that the liquid had become solid and useless. The rubber cement sold at the rubber stores is made of virgin or pure rubber, dissolved in either bisulphide of carbon, chloroform, ether, naphtha, benzine and several others. The rubber must be "virgin," the pure article, as it is imported. Most of the rubber articles are made from "vulcanized rubber," which contains but little of the real gum. The rubber is cut into fine shreds, placed in a tin vessel, and covered with about six times its weight of bisulphide of carbon. If the vessel is placed in another, containing water heated to eighty-six degrees, solution will take place very rapidly. Bisulphide of carbon is exceedingly inflammable; so are most of the other liquids named above, and should be used with a full knowledge of their danger.

Rice and the Birds.—A correspondent writes us from Washington that Doctor Merriam, Ornithologist of the Department of Agriculture, is actively engaged in investigating the losses to the rice crop caused by birds, and in devising methods of preventing them. The bobolink, or rice bird, is the great enemy of the rice planters of Louisiana and South Carolina; if a field of rice lies in the way of this bird during its migration—especially if the grain is in milk, the rice left by the birds is scarcely worth harvesting. Early planting, to have the grain past the milk state at the time the birds migrate, is a partial remedy. Driving off the birds by means of shot guns and whips is the only remedy now in use, but Doctor Merriam has devised others, which will be tested in the coming season and the results announced. Every rice planter employs an army of men and boys, called "Bird Minders," during the season of migration. A plantation of twelve hundred acres requires one hundred minders, each of whom consumes a pound of powder daily. The season of migration lasts for thirty-five days, and their outfit is about four thousand dollars. In spite of the efforts of the minders, the birds get away with a large share of the rice. It is estimated that the aggregate loss to the rice planters on account of birds is about two millions of dollars. A heavy sum to pay for fattening that most delicious of morsels, the rice bird, for northern markets.

In the Field in Midsummer.—From the little care taken to preserve their health, by those who must expose themselves to the heat of midsummer, we do not wonder that many sunstrokes occur, but that there are not more of them. The "head-gear" at this season is the most important part of the clothing. The quality of the hat is of no consequence, the quantity is. Wear a straw hat, of course, with a very broad brim; let the crown be as tall as possible, that there may be a large air-space above the head, and it should be ventilated. If the braid of straw be close, cut several small holes for ventilation. The old advice to wear a cabbage leaf upon the head beneath the hat is sound, but a moistened cloth or several layers of wet paper will answer as well. Take long noonings, beginning work earlier and continuing it later. Now, that ice is in such general use, many supply abundant ice-water in the field; this is a more frequent cause of summer illness than all others. The overheated worker goes to the ice water and the first draught is so welcome that he drinks copiously. The frequent consequence of taking a large quantity of cold water into the stomach is a sudden collapse, and not, rarely, death. Cool spring water is cold enough for drinking, and if ice is used at all it should be to cool the water to that of the springs—fifty degrees, which is vastly safer than ice-water at thirty-two degrees. Happily the use of spirits in the harvest field belongs to the past, but there are drinks which may be safely used and allay thirst in smaller quantities than water. Black tea, sweetened, with enough lemon juice to give a pleasant flavor and cooled to fifty degrees, will be found very acceptable; and the old-fashioned "switchell" is excellent. This is molasses and water, to which ginger and vinegar are added, according to taste, and cooled. A little and often should be the rule with everyone for all drinks, including water, when one is over-heated.

Animal Ailments.

Diarrhea and Dysentery.

The most prevalent disorder of the summer months among live stock is diarrhea, commonly called scours. This trouble affects cows, calves, sheep and lambs, and is usually mistreated under the mistaken apprehension that a too laxative condition of the bowels calls for astringent medicines. Hence the popular remedies, such as alum, copperas and oak bark, are usually given, not only without good result, but often mischievously and gradually irritating the mucous membranes so much, that fatal dysentery occurs and the animals perish miserably. Young creatures often suffer in this way for the mistakes of their owners, and the heat of the summer to which the sick animals are exposed, with the want of water, aggravates the disease and make it rapidly fatal.

Diarrhea is an indication that the intestinal canal is suffering from the presence in it of irritating and undigested matter. There are other causes of this disease, as inflammation induced by cold or the results of impure water; but improper feeding, or the indigestion of the food are the most frequent causes. It is obvious then that the use of any astringent medicine would have the very opposite effects to those desired, as they would tend to retain in the bowels the injurious matter which nature is exerting all its power to eject. It is equally true, that all acrid and stimulating substances such as turpentine, alcohol, cayenne pepper and others, often given in cases of diarrhea are, at the best, only questionable and may be positively dangerous as increasing the irritation and inflammation of the already diseased organs and so only adding, as it were, fuel to the fire.

THE TREATMENT OF DIARRHEA.

In most cases the treatment should be gentle and palliative. Raw linseed oil, in doses of one ounce for each one hundred pounds in live weight, is the most useful medicine. It soothes the tender and inflamed stomach and bowels, and gently ejects the offending matter. It is not drastic in its action, but gently laxative and soothing. A great deal may be done in feeding; linseed, or oatmeal gruel, slippery elm bark infusions, and any other gummy and mucilaginous liquid food are useful; if any tonic is thought proper, a dram of ground ginger to the quart of liquid and a liberal quantity of sugar or molasses will be beneficial. Food and excess of water are to be withheld, and pure water as cold as can be procured is desirable. In bad cases, ice water in small quantities at a time has a good effect. After the laxative has operated, the following mixture may be used, viz.: One ounce of laudanum, one ounce of tincture of rhubarb, two ounces of essence of peppermint, one ounce of prepared chalk to a pint of water, slightly thickened with gum arabic, all well shaken in a bottle. Of this mixture, a teaspoonful may be given to a lamb and two to a calf every hour. Half the above quantity may be given at one dose to a cow or a horse, but smaller doses frequently repeated are preferable. S.

Corns.

Horses are subject to corns, just as human beings are who wear shoes. When the horse's shoe is removed, and the hoof scraped, little red spots will be seen. These corns are painful to the horse, and if not relieved are liable to break out above the coronet. The remedy is to cut out the corn with a sharp knife, and adopt the bar shoe.

Hide-Bound.

The state of a horse whose skin is tense and closely drawn over the ribs, is usually termed hide-bound. In itself, this is only a symptom, and generally indicates some disturbance of the digestive system. It is not, as many suppose, a symptom of worms, though horses in this condition are very apt to have them, and will disappear with the animal's return to health. The treatment of the hide-bound condition consists in removing the cause of the digestive derangement. Complete change in diet, with a warm bran mash in the middle of the day, is of great service. Keep the horse well groomed, and give only pure water to drink. A good compound to mix in the food for improving the general condition of the animal, is: Powdered sulphur, salt, powdered sassafras root, of each three ounces, and of powdered blood-root two ounces. Mix, and divide into twelve parts. Give one part morning and evening.

Hollow-Horn and Tail-All.

These are the common names applied to numerous complaints of cattle young and old. They are probably more characteristic of symptoms than diseases, yet no one seems able to account satisfactorily for the presence of the worm in the tail, or the hollow in the horn, though the latter is often attributed to catarrh. Do not bore the horns or split the tail, but give the cow a half pound of salts dissolved in a quart of water, put her in a warm, dry stall, and feed her with roots well sprinkled with meal and bran. This is a safer cure for horn-all and tail-all, than the barbarous methods still practiced by many.

Racks and Troughs for Feeding Sheep.

THOMAS STEPHEN POWERS.

In feeding our domestic animals the quantity and quality of the food are of first importance, but that of the manner of feeding is nearly as great. Careless and proper feeding often determine the difference between success and failure. Animals bring loss when fed upon the ground, by scattering their food and trampling upon it; or, if a trough

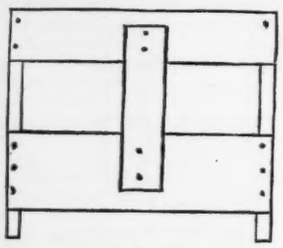


Fig. 1.—END VIEW OF SINGLE RACK.

is provided, some animals — sheep and pigs especially—will get into it, and by soiling its contents render them unfit for food. Many feeding appliances have been devised for preventing loss and waste of food. A number of engravings of those intended for feeding sheep, and which have been found well adapted for their purpose, are here given.

FEED-RACKS.—The purpose of a feed-rack is twofold:—1. To keep the feed in. 2. To keep the sheep out. The first and greatest requisite toward the making of a good hay-rack I would formulate thus: Cut hay green. That is to say, if the hay is thoroughly good the sheep will stand quietly and eat it; but if it is inferior they will continually run to and fro, pulling out a little here and a little there, chewing the heads off as they run, and dropping the remainder underfoot.

With regard to the first point above mentioned, I may say that, so far as my own experience goes, when the hay is bright and sweet, I have found the old-fashioned slatted box-rack good enough for all practical purposes. And when the hay is not good, no rack, however ingenious, will prevent sheep from wasting more or less feed I will enumerate some general principles that ought to be observed in the construction of all racks:

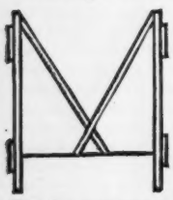


Fig. 2.—END VIEW OF DOUBLE-RACK.

1. *Portableness.* A rack fastened down anywhere, though it will undoubtedly wear longer, is objectionable. It is inconvenient to remove manure from beneath it, and it cannot be used to partition off a house into compartments of different sizes and shapes to suit an emergency. There is nothing better for this purpose than a portable rack.

2. *A tight floor.* Every sheep-house should have the earth for its floor, and if the rack has no floor of its own a great deal of fine feed will mould on the ground and be lost.

3. *Sufficient elevation.* In every flock of considerable size, no matter how well bred, there will be

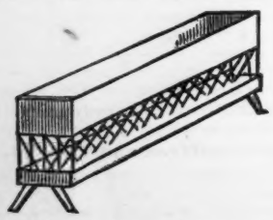


Fig. 3.—SINGLE RACK AND FEED-TROUGH.

some leggy animals that will never be satisfied until they are inside the rack. The rack should be forty inches high.

4. *Separation of hay-rack and grain-trough.* Many of the best practical shepherds with small flocks to care for, by various contrivances unite rack and trough together; but in my own experience, especially with large flocks, I always found these objectionable. It is almost impossible to prevent troughs so constructed from becoming receptacles for dung. In any event, they have to be cleaned out at every feed, else the feed will be mingled with sorts, chaff, seed, etc. Out-door troughs collect snow and ice, it is true, but that is all, and they do not require to be cleaned half as often as troughs attached to racks. Nevertheless I have figured below some of these combinations.

Racks are single or double; that is, the sheep reaches through between one set of slats or between two sets. There is no great gain in a rack made double, except that a place is furnished for a feed-trough, which is placed at the bottom of the hay-rack, between the outer and inner sets of slats. In a double rack the sheep is prevented from thrusting its neck full length into the hay and cannot get chaff into its wool. This is unimportant, however, unless sheep are to be shorn immediately at the close of the feeding season; if they run on pasture a few weeks the chaff will work out of the neck-wool of its own accord.

A single feeding rack should be, for lambs, about two feet wide; for grown sheep, about thirty inches. This width should enable two sheep, standing on opposite sides, to reach the middle. It may be of any length desired; fourteen feet is convenient. For lambs it need not be over thirty inches high. There should be about nine inches space between the top-board and the bottom-board; the slats four inches wide; the spaces between them eight inches wide for grown sheep and six inches for lambs. This gives each lamb ten inches space to stand in, each grown sheep a foot. All

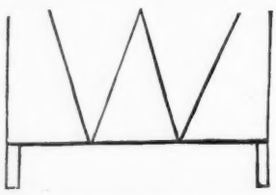


Fig. 4.—END VIEW OF TWO DOUBLE-RACKS.

edges should be rounded off to prevent tearing the wool. The corner posts, four in number, may be about four inches square. An end view is shown in figure 1.

Figure 2 represents the end of a double-rack, or an inside V-shaped rack and an outside perpendicular-sided one. The inside rack is made of slats nailed on a V-shaped trough which is inverted and nailed down on the floor of the rack.

Figure 3 shows a V-shaped rack with a feed-trough at the bottom on each side. The rack-sticks are round; they are let into the bottom-plank by auger-holes, and into the top-boards the same way.

Figure 4 is an end view of another double-rack; two V-shaped racks are placed inside of one square one, with a feed-trough at the bottom of each.

Cutting Meadows for Hay.

Great judgment should be used in this, as some meadows require the grass to be cut as close to the surface as possible, while on others it must be left of greater length, so that it may be necessary to vary its height from half an inch to three inches. Meadows of fine natural grass, like some of those bordering the Connecticut river, can be mowed very close, while uplands stocked with cultivated grass would be much injured if cut so short, especially if followed by dry weather. A difference also should be observed in the cutting of different kinds of grass, as the finer the culms, or stalks, the closer it can be cut without injury. Red-top or blue-grass, for example, can be mowed considerably closer to the ground than timothy, or, perhaps, orchard grass or clover. It is an old adage among farmers that "an inch at the bottom is worth two at the top;" but surely in feeding quality, the reverse is the case with the three last mentioned grasses.

Wire Fencing.

JOHN GOULD, OHIO.

BRACING A WIRE FENCE.—In bracing the end posts of a wire fence, the usual brace from the first to the second post is generally only of temporary account, and of little good only when the brace comes up considerably higher than the top wire. Several years ago I abandoned this, and now brace from the other direction, using a wire for the

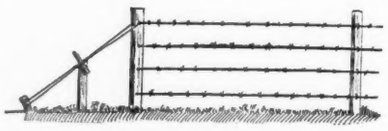


Fig. 1.—WIRE BRACE.

strain. I build the fence as usual, only instead of the brace, I use a doubled wire from the top of the post to the "stub," as shown in figure 1. This last should be set very deep, and a little slanting. The post at first is stayed with a good chain, until the wire is strung; then, before removing it, the wires are put on, a stick put through them and twisted up. The chain is then removed. Whenever the fence wire sags it can be tightened by twisting the bracing wire, and if the stub becomes a little loose a heavy maul soon settles it back to its place. In turning corners at the road this plan is often defeated for want of room, but for general farm fencing it has no objections on the score of want of place to set the stub.

BUILDING WIRE FENCES ON UNEVEN GROUND.—One of the great perplexities about building wire fences on rolling ground, is how to make the posts in the hollows remain firm, for the pull of the wire in wet weather, or when the frost is coming out, lifts them and causes the wire to sag and they cease to be an effective barrier. Posts should not be used in the lowest depressions, but in their place at the lowest spots a heavy stone should be partially sunk into the ground, about which a smooth fence wire has been wrapped, as seen in figure 2. When the fence is built the fence wires are brought down to their place and the wire about the stone is twisted first about the lower wire, then the next, and so on to the top. This prevents the wire from raising, and does away with all trouble in the posts being pulled out by the wires. In crossing small streams the same plan is successful.

To Build a Cheap Silo.

Whatever cheapens the cost of the silo, or lessens the expense of filling it, will hasten the introduction of the method, especially upon the farms of those of moderate means. The important experiments on ensilage conducted at the Massachusetts Agricultural College, have shown that a balloon frame of scantling, of suitable size, covered on the outside with matched boards, and lined on the inside with two thicknesses of one-inch matched boards, with a layer of tarred paper between them, thus securing a partially air-tight enclosure, surrounded by a dead-air space as a protection against

Fig. 2.—FENCE ON UNEVEN GROUND.

frost, is the best and cheapest form of construction. If the boards and timbers are saturated with hot coal-tar, which can readily be done with trifling expense and little labor, the duration of the silo will be very much increased. Silos are, in these respects, similar to ice-houses, their usefulness does not increase with the ratio of their cost.

The Old English "Bobtail" Sheep Dogs.

Many of our readers doubtless suppose that the Scotch colley is the only "sheep" dog. To such it may be a surprise to learn that there is another breed very different from the colley that is fully as much of a sheep dog. We allude to the old English bobtail sheep dog, generally born without a tail, or at most a very short one, and with a rough, shaggy coat of hair. They are a much heavier, more compact dog than the colley, and although without his beauty, they may safely challenge competition for usefulness; in fact, those who have them say they are much better natural workers than the colley. One, owned in Western Pennsylvania, although only a year old, will stop the rams from fighting, and "lay by" a weak sheep all day, keeping other stock from running over it; will run near his master, or where he thinks he can be heard, barking like all possessed if a sheep gets into any trouble, such as getting fast in a wire fence; will guard anything of his master's he finds in the field, and when a sheep is brought home, killed and hung up for dog-meat, "Bob" will establish himself as guard, and not a dog dare go nearer than the distance "Bob" prescribes. All this is without any training, being simply his natural disposition. This natural disposition is easily accounted for, as they are too odd-looking to become general favorites on the show-bench, and therefore have been bred altogether for use.

OLD ENGLISH "BOBTAIL" SHEEP DOG.

Root House and Barn.

A subscriber, who gives as his address "Latitude forty-seven degrees north, longitude twenty degrees west, Washington," sends us the following description with plans of an above-ground root house and barn combined, which he has used for two seasons to his entire satisfaction:

Figure 1 represents the ground plan of the building. Horse stable, *H*, 14 by 28 feet; cow stable, 14 by 48 feet; *a a, a a*, bins for roots; *b b*, 2½ feet space, packed with hay; *e e e*, 2½ feet air-space, and for circulation of heat from stove, *s; c*, brick chimney. A common, upright, sheet-iron stove with brick lining is used; diameter about 1 foot. The flue, shown by dotted line, is sheet-iron stove pipe suspended from the ceiling—a six-inch glazed earthen pipe would be preferable. *M* is the main

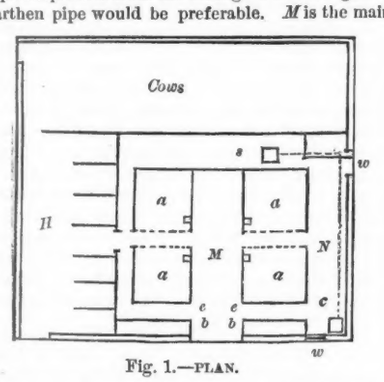


Fig. 1.—PLAN.

entrance and passage to root bins. In filling the root house, the wagon is backed into this passage and the roots emptied directly into the bins. After the bins are filled the passage can be used for storage room. The door is then securely fastened, and the space between the dotted lines filled with hay or straw. The air-space *e* can be utilized for storing cabbage, hung up by the roots, or for the storing of anything which will not materially interfere with the circulation of air. The space, *N*, is used for a work-shop in winter, especially for washing and cleaning vegetables, and getting them ready for market; *w, w*, windows. The floor is supported by four posts, their position shown by the four small squares.

Figure 2 is the end view of the building, which has 13-feet posts on one side, and 16-feet posts on the other. It also shows position of the floor over root house, and the manner in which the roof is supported, two thicknesses of inch boards being used on the roof, with paper between them instead of shingles. The studding, flooring joists and roofing joists, are all 2 by 6 seantling. All outside walls of the root house are built up with two thicknesses of inch boards, both inside and outside the studding, with paper between the boards. The floor of the hay loft over the root house is also of two thicknesses of boards, with paper between them.

Figure 3 shows the longitudinal sections of the root-house, and I think needs no explanation. The main difference in my root house from others which I have seen described in the *American Agriculturist* is in having an air-space all around the interior of the building, and in having the stove situated near the outside wall, instead of near the center of the building. Had my stove been near the center of the building, and vegetables packed against the outside wall, as is usual, I might have kept the temperature of the house up to sixty or seventy degrees, and I could not have kept the vegetables adjoining the outside walls from freezing; as it is, I can maintain an equal temperature throughout the whole building, the thermometer not varying more than two or three degrees, excepting in the immediate vicinity of the stove. Last winter, up to February 15th, I used only about one ton of coal, and have kept an average temperature of forty degrees during the coldest weather.

To Find Contents of Box or Bin in Bushels: Find contents in cubic inches and divide by 2150.42. Thus the number of bushels in a box eight feet long, four feet wide and two feet six inches deep, would be found by multiplying the continued product of the three dimensions, viz., 80 cubic feet by 1728, which gives 138,240 cubic inches; divide this by 2150.42 and we have 64.28 bushels. Another, not so accurate, but more practical because simpler, is the following rule: Take four-fifths the number of cubic feet. In the above example we would take four-fifths of 80 feet; *i.e.*, 64 feet—near enough for all practical business purposes, and saves much figuring.

"Sour Fodder."—Primitive Ensilage.

Origin of Ensilage.—In Northern Europe there occurred, about half a century ago, several successive years which were so unusually cold and wet at harvest time that farmers, being unable to harvest their forage crops, left them to rot on the field. The second cut of clover and the aftermath were generally lost. A German farmer, whose name is now forgotten, conceived the idea of throwing his entire forage crop cut late in the fall, into a deep pit dug in the field, and to cover it with earth to protect it from frost. The forage when thrown into the pit was very wet, was hard on account of the growth of the woody fibre, and the most hoped for it was that it would make a useful addition to the compost or manure heap. Upon opening the pit the following spring the farmer, to his great astonishment, found, instead of a mass of manure, a solid body of vegetable matter, giving off an agreeable odor, the individual parts of which were thoroughly fermented and softened. Upon trial, he found that the farm animals ate the contents of the pit with avidity, improved on it and soon preferred it to their usual feed. The results of this farmer's experiment soon became widely known, and agriculturists, especially dairymen, imitated this method of curing forage. The agricultural journals took up the subject, and these and scientific investigators concluded that there was here discovered a new and cheap method of preserving fodder plants, and one especially adapted to small farms,—a method which, by fermenting them, would render the plants more digestible and nutritious and at the same time more palatable.

This method received the name of "Preparation of Sour Fodder." It is true that there appeared opponents to this method who declared that animals did not like forage thus prepared, and when forced to eat it were subjected to maladies and even died. When these cases were investigated, the untoward results were found to be due to improper preparation, allowing the forage to mould, to salting the fodder or to exclusive feeding on fodder thus prepared. As long as forty years ago

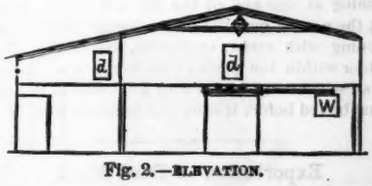


Fig. 2.—ELEVATION.

it was, in Germany, an established fact that well prepared sour fodder, when properly fed, will not only be eagerly eaten by the farm animals, but will agree with and improve them.

The agricultural journals advised farmers to preserve their fodder plants in this manner in order to keep them longer, to improve them and to increase the quantity of forage. It was remarked that every plant, if it were not poisonous and had not become too dry, could be made useful for feeding purposes. The farmers accordingly gathered

Fig. 3.—SECTION OF ROOT-HOUSE.

not only the proper forage plants but potato vines, turnip leaves, the leaves of trees and grape-vines, the last cut from meadows and clover-fields; nay, they even gathered plants which are usually refused by animals, such as horsetails (*Equisetum*),

swamp grasses, sedges, etc. It was demonstrated that these plants, under this treatment, became not only harmless, but palatable.

TO PREPARE SOUR FODDER.—The method followed in Germany is to excavate oblong pits, having a surface of 200 to 300 square feet, and eight to ten feet deep. These are made on a part of the farm where there is a heavy clay soil, and where there is a perfect drainage, so that no water can settle in the pit. The sides of the pit must be perpendicular. The forage, after it is stowed in the pit, begins to shrink, and unless the sides are perpendicular the mass cannot settle equally. Some farmers line the bottom and sides of the pit with brick. These afford excellent storage places for sour fodder, but the mason work is not necessary.

THE FILLING OF THE PITS.—As soon as the fodder plants are cut, and before they can dry, a layer two or three feet thick is uniformly spread over the bottom of the pit and tramped down by the workmen. It is not advisable to use wooden rammers as the layers are apt to be, in parts, too closely compacted. Layer after layer of fodder is added, and tramped down, until the mass of fodder reaches three or four feet above the surface of the soil. Earth is then to be thrown around this portion which projects above the top of the pit to form a sort of curb around it about four feet thick, which is to be firmly pressed down. By spreading the forage evenly as it is added, and tramping it down uniformly, the air is expelled from the mass. To expel the air more certainly, and to avoid air-spaces in the fodder, water is poured into the pit, especially shortly before closing it. In case the fodder is cut during a dry time, water will be required to generate fermentation. After the pit has been filled in the manner described, a layer of clayey soil, three or four feet in thickness, is thrown upon the fodder. This covering should be somewhat the highest in the center, and pressed down all around so that it may shed water. A few days after the pit is made the top will begin to settle and cracks will appear in the covering of earth. More earth must be added and firmly pressed down in order to exclude the air.

In about six or eight weeks fodder thus pitted will be cured and ready for use, and will be preserved, unimpaired as food, for several years if it has been judiciously treated.

The method here given is the usual way in which German farmers prepare "sour fodder," though there may be differences on account of local or climatic reasons.

OPENING THE PITS.—In opening the pits, care must be taken to prevent the access of air and water to the forage. It is best to make a small opening at one end of the pit, and having taken out the needed quantity of the forage, to close the opening with straw, or boards, and earth. The fodder within the pit will be found in a compact mass, which must be cut with a suitable knife, and must be fed before it dries and becomes worthless.

Exportation of Dead Meat.

It has become highly necessary for us now to bestir ourselves to increase the exportation of fresh meat of all kinds as fast as possible, and also to improve the cold air storehouses, railroad cars and compartments of ships. Rivals for this large and lucrative trade are rapidly springing up, and unless we keep on the advance they will take precedence over us and obtain the greater share of the profits of this promising business. Canada, bordering on our domains, together with distant Russia, Austria, Hungary and other European nations are striving for this trade, while Australia, New Zealand and Buenos Ayres have taken it up, and are making the best possible arrangements for its rapid increase. The three last countries have immense flock and herds grazing their vast plains from which to select for exportation.

The butchers in the United Kingdom, as well as those in the United States, are bitterly opposed to the introduction of fresh, cold meat, and are doing all they can to prejudice their customers against it, simple because it will injure their business. But suppose this to be the case, shall the people at large be cut off from the great benefit of its consumption. This foreign cold fresh meat can be furnished considerably cheaper than that from live animals at home, and it is of equal quality—some say it is more juicy, tender and savory from being frozen.

One great advantage of exporting fresh meat over live animals is, that when arriving in England, if the market happens to be dull or overstocked for the moment, it can be put into cold storehouses and there kept perfectly till the market revives for its sale. Another important consideration is, that if our domestic animals are slaughtered at home, we keep their blood and offal to turn into fertilizers, to enrich the land, their hides for the tanner, the wool for the manufacturer, and the horns and bones for various purposes.

To Prevent Rust.

The rusting of iron causes endless inconvenience in all branches of mechanical work. Iron rust impairs the value of the farmer's machinery, and the rusting of nails and bolts causes wood-work to lose strength, become leaky and fall to pieces. Rust may be banished and thorough protection given to iron whenever it is in such a position that a coating applied with a brush does not interfere with its usefulness. Bright and rough work can be alike protected, and so may nails, wood-screws and bolts.

Get two or three pounds of red lead and some boiled linseed oil; do not be persuaded into using raw oil. Get also some Japan drier; this will be needed at the rate of perhaps a tablespoonful to the pint of oil. Red lead cannot be bought ready mixed because it hardens too rapidly. Remove all the red rust from the iron, steel, tin or other metal; if painted, take off all that is not hard and firmly attached to the iron. Mix up a small pot of the paint, but not more than will be wanted for the work in hand. The Japan is used because quick drying is convenient. One-tenth as much litharge in powder as lead is sometimes an advantage. Give the articles a thin coat; keep the paint well stirred up as it settles very rapidly. When one coat is dry mix up another and apply as before. If closely covered the mixed paint will keep twenty-four hours or more.

This paint is water-proof, and in making a tank or trough it is better than the best white lead for putting into the joints when they are put together. Dip a nail into red lead and put a drop under the head before it is driven home and there will be little or no danger that the wood will ever become "iron sick" around it. Swab screws or bolt holes with it, and give the screws or bolts a coating, and they will not rust in the wood.

Tin pails covered with two or three good coats of red lead paint, resist water as well as though they were rubber. The coating is hard and very durable; in this respect being greatly in advance of any other paint. If the color is objectionable on iron, a coat of ordinary paint may be put on the outside.

Red lead paint actually forms a perfect protecting coating for iron, as well as a cement of no mean strength. The reason why it is not generally used by manufacturers may be asked. The answer is simple. It cannot be mixed in large quantities, in advance, as it hardens too soon; it is heavy and somewhat costly, as compared with other paints; it settles in the bottom of the bucket and is not so easily applied as white lead and other paints. To the farmer none of these things are special objections. The superior protection is worth all the trouble required. Finally, try red lead in putty or make a putty of it when a water-tight job is wanted. Joints of carriages, wagons or wheels, set in red lead putty or paint will not open, and a red lead coating or priming on a carriage, cart or any other farm tool, will insure most perfect protection for the wood. By all means, try it and test it before discussing its advantages with a wagon maker. Individual knowledge and practical experience is worth considerably more than good "trade" reasons.

Millet for Late Pasture.

Millet for late pasture, or even for a late crop of hay, may be sown early in July. It is always well to have an abundance of green feed late in the season, when the pastures usually fail; and by July 1st it can be known what will be the yield of the meadows, and if there is a deficit it can be provided for by sowing millet. The seed-bed must be thoroughly prepared for millet at any season, as the seed will not germinate if the conditions are at all unfavorable, and if the millet is then on the ground it will be coarse and inferior for food, and likely mixed with weeds. But if sown in July, the seed-bed must have the very best of preparation, as at this season the seeds are less disposed to germinate. The best plan is to roll the ground down as fast as it is plowed; then harrow thoroughly, sow the seed at once, and cover with a plank-drag. If there are good prospects for a rain, delay sowing, as the best time to sow is just after a rain, and the worst time is just before a rain.

Millet will produce a good crop on any good soil. It does best on loamy land. For the South the most valuable variety is the Pearl or Egyptian millet. It will not mature north of the fortieth parellel. It yields enormously in the South, and, if cut when young, will make a second crop. Common and German millet are often confounded. Common millet has the clover heads. Both are excellent fodder plants. For hay, millet should be cut before it is ripe. The hay is better for cattle than for horses, especially if not cut early.

Plotting Out the Prairie Farm.

R. G. NEWTON, DAKOTA.

In starting a home on the prairies one can easily show his good sense in the location of the buildings. Here you have one hundred and sixty acres, take pencil and paper, and upon the supposition that you locate your buildings all in one corner, as nine-tenths of the settlers do, you can easily estimate the amount of teaming it will require one of these days to get the produce to the barns from the forty acres in the opposite corner. This will lead you to locate the buildings near the center of the claim. The best plan is probably to lay out the farm in ten-acre lots. You can then, by leaving just space enough to drive a wagon, go to any part of the farm in the least possible time, you will also have the advantage of knowing just how much land you have to a given crop, the yield per acre, and many other things you should thoroughly understand to work to advantage. Besides by locating in the center you can see all that is going on at any part of the farm, keep better watch of your stock, if out in pasture, and see that dogs or wolves do not worry or destroy your sheep.

The division into lots of equal dimensions, and the same space can not be conveniently done unless the land is very level. If undulating, or cut into by a dry run, or by sloughs, or moist meadows, which nature laid out without regard to section lines, you will have to cut according to the shape of your cloth; even in that case it will be a good plan to have stakes every ten rods apart on the outside lines. If, however, you plant a row of trees around the claim by setting them a rod apart and using a Lombardy poplar for every tenth one, you can see from a distance, and locate any point with considerable accuracy; and it will aid you greatly in getting the location or size of any plot on the farm.

FOR AN UNKIND EWE.—When a ewe will not own her lamb put her in a small stanchion, similar to those which are used for cows. A few of these should be provided ready for use wherever a flock is kept. They are put up in a dark pen and the lamb is left with the ewe, and will worry along to get the milk so long as the ewe cannot turn around to fight it away. Another plan is to have a strap put around the ewe's neck, and fasten her in a small stall, the sides of which are not too low for the lamb to get under them to reach the teats.

Poland China Swine.

The very great and ever increasing demand in the markets of the world for the flesh of the hog, is a constant incentive to farmers to produce new and improved breeds of swine. Nothing in this line of progress in late years has been more noteworthy than the success attendant upon the production of the breed known as Poland China. The great interest taken in this breed led to much discussion and speculation as to its origin. Like all other improved breeds of animals its formation was so

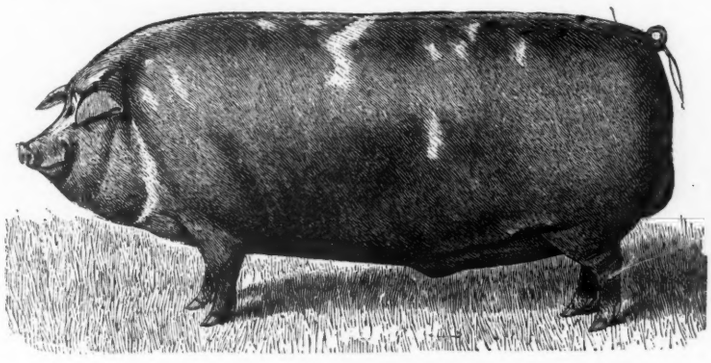


Fig. 1.—POLAND CHINA BOAR.

gradual that no exact time can be set for its having reached completion. The legend of its history most generally accepted, is the story told by Cephas Halloway before the committee of the National Swine Breeders' Association, at its meeting in Indianapolis, in 1872. Mr. Halloway had resided in Warren County, Ohio, where this breed originated, since 1813. The first foreign breed introduced to the Miami Valley was the China hog, in 1816, and about twenty years later, Mr. Munson Beach introduced the English Berkshire. About five years after this the Irish Grazier was brought to Warren County, and these breeds were extensively crossed with a former cross of the China and original county hog. Mr. Halloway says the stock thus produced, constitutes the true and original basis of what is now known as the Poland China breed. At this convention the name agreed upon was Poland China, though there had been much contention over the name before this. At the West this breed was generally known as the "Magie," "Miami," "Butler County," "Warren County," and by other local names.

The characteristics of this breed are large size, robust constitution, and an equitable intermingling of lean and fat in hams and shoulders, which makes it the universal favorite among the commercial fraternity. The National Swine Breeder's Association made up the following description for governing judges in passing upon the characteristic features of this breed: Good length; short legs; broad, straight backs; deep sides, flanking well down on the legs; very broad, full, square hams and shoulders; drooping ears; short heads, wide between the eyes; of spotted or dark color. The breed is very hardy and prolific, and when fat the pigs are perfect models, pre-eminently combining the excellencies of the large and small breeds.

The accompanying illustrations give a striking representation of these qualities, and prove to the eye that which has been already consented to by the judgment—that this is the hog for the great West, and is certain to grow in popularity with those farmers who breed swine to supply the demands of commerce.

TO FIND NUMBER OF TONS IN A LOAD OR SMALL STACK OF HAY: Take contents in cubic feet and divide by 512; or, take contents in cubic yards and divide by 20. For example, in a stack 18 feet (6 yards) long, 12 feet (4 yards) wide, and 12 feet (4 yards) high, we would have 2592 divided by 512—equals 5 tons. Or, by the second method, we have 96 divided by 20—equals 4.8 tons. True, these rules are not identical in effect; and owing to the varying weights of different qualities and stacks, neither can be absolutely depended upon. Actually weighing is the only safe guide.

Disinfectants and their Uses.—Food Preservatives.

H. ENDEMANN, PH.D.

The substances which have been used as disinfectants and antiseptics are taken from almost all classes of chemical substances. Most of the inorganic substances can be used only for the purpose of disinfection and cannot be employed as preservatives for food on account of their being poisonous. To this there are but very few exceptions, like phosphoric acid, common salt and boric acid. As a rule, all inorganic acids, if they are soluble in water, are true disinfectants and antiseptics. With regard to muriatic acid I ascertained, that if a mixture contains one sixty-fourth of its weight of the free acid, it is fully disinfected. Many of the other strong acids, like sulphuric acid and nitric acids, come, in their properties, very near to muriatic acid, but they present the disadvantage of being easily decomposed and their properties impaired or destroyed. If a mass, therefore, is unequally disinfected by these substances, the growth of bacteria will not only not be checked in those parts, where there is not enough of the disinfectants, but each spot will form a centre from which putrifaction will surely spread again. What is true in this respect of these acids is likewise true of their salts. Hence, it follows that chlorides are always preferable to sulphates, and these, again, preferable to nitrates. It is, therefore, not so much the disinfecting property as the stability of the disinfectant which is used that decides the usefulness of special preparations. Another consideration in the selection of disinfectants is the price at which such substances can be obtained. In the practical application of disinfectants we must always use a considerable excess of these, and the price is therefore of importance, in order that we can better afford to deal liberally. For this reason, waste liquors from chemical manufacturers are often used with great advantage. In many cases disinfection is looked upon as of doubtful advantage and people are not over particular. The high price of many fancy disinfectants often prevents the use of any, even where they are most needed, especially in the abodes of the poor. One pound of sulphate of zinc, worth only a few cents, will do as much as half a gallon of the various fancy disinfectants in the market; not only more prompt disinfection would result, but a great saving in cost. The substances most frequently used are as follows:

First, Inorganic Disinfectants.—1, chlorides of zinc and iron; 2, sulphates of zinc and iron; 3, free hydrochloric acid and sulphuric acid, and the same in combination in their salts, 1 and 2; 4, common salt; 5, sulphate of copper (blue vitriol); 6, corrosive sublimate; 7, boric acid (boracic acid); 8, phosphoric acid; 9, arsenious acid (white arsenic); 10, quick lime; 11, sulphurous acid and its salts; 12, chlorine, and chlorides of lime and soda.

Second, Organic Disinfectants and Antiseptics.—1, acetic acid (vinegar); 2, salicylic acid; 3, coal-tar products, like phenol (carbolic acid), cresol and naphthol; 4, creasote (the active principle of smoke from the imperfect combustion of wood); 5, alcohol and alcoholic liquors; 6, sugar; 7, glycerine.

Of these the coal-tar products are used as active disinfectants, glycerine and alcohol as preservatives for anatomic specimens, etc. Creasote is used for the preservation of meat, while the rest, sugar, alcoholic liquors or dilute alcohol, vinegar and salicylic acid, are the main preservatives for fruits or vegetable products. If we class these agents according to their use we have the following groups:

1. Disinfectants, viz.:—The chlorides of zinc and iron; sulphates of zinc and iron; sulphate of copper; mineral acids—as hydrochloric and sulphuric acids; corrosive sublimate; sulphurous acid and its salts; chlorine, and chlorides of lime and soda; coal-tar, phenol, cresol and naphthol; creasote; salicylic acid.

2. Preservatives—the substances not to be used in food—in addition to the foregoing:—White arsenic, alcohol, glycerine, and phosphoric acid.

3. Preservatives for food products:—Common salt, boric acid, vinegar, salicylic acid, spirituous liquors, sugar, and creasote in smoked provisions.

Taking the members of this last group first, I consider—

Common Salt.—Salt is used almost exclusively for the preservation of meat. The manner in which it is applied, for instance, for the preservation or curing of beef, is as follows: As a rule, the meat is first pickled, then packed, and finally must be freshened by soaking in water before cooking. All of these operations, including the final boiling, make strong drafts upon the soluble constituents

Fig. 2.—POLAND CHINA SOW.

of the meat, and proportionately decrease its value and digestibility. For this reason many other modes of preserving meat have been recommended.

The drying of the meat is an old method, but it has always been unsuccessful on account of the fat turning rancid after awhile. This, on account of its being interspersed in single cells between the meat fibres, cannot be all removed. The freezing of the meat and shipping it in refrigerator cars and ships is an accomplished fact, but economically useful only under favorable circumstances.

The Use of Boric Acid.—One of the best and most

successful methods of preserving beef is by the use of boric acid. If meat is packed without previous preparation, except cutting it into pieces, with boric acid alone, it becomes in time covered with a black crust. The meat becomes so unsightly that its sale would thereby be considerably impaired. The packing must therefore be done with the addition of alum. This is greatly to be deplored, for the alum is rightfully looked upon by the sanitary authorities and the public as an injurious addition. The only remedy which has so far been found is to reduce the boric acid and thereby the alum to a minimum, by combining this method with the ordinary pickling. In this way part of the preservation may be accomplished by salt. Experiments which I made in this direction on a large scale showed, in the first place, that the meat before packing should not be pickled, but on the contrary the meat must be packed with all its natural juice. If this precaution is omitted the boric acid will not show the least antiseptic properties. In order to carry out this method I found the following proportions quite satisfactory: Meat, in not too large chunks, is packed into barrels after each piece has been covered with a mixture of one part (by weight) of boric acid and one-half part (by weight) of alum, allowing of this mixture three-quarters of a pound for one hundred pounds of fresh beef. When the cask has been filled the head of the barrel is put on and the whole space within filled by a ten per cent. salt solution. Yet here the consumer gets with his meat a quite liberal dose of alum. Allowing about one-third as remaining on the pickle this would amount to about ten grains for each pound of meat. It is evident that the digestibility and nourishing qualities of the meat must suffer thereby greatly. I have no doubt but that this objectionable feature of the process can be avoided by further experiments in this line, which, however, I have not had occasion to make. Hergen's method of preservation omits the use of alum, but his meat must contain as much as forty to fifty grains of boric acid for each pound of meat.

Sausage meat is preserved by the use of a very small quantity of boric acid alone, and this may be mixed with the salt and used to suit the taste.

Other Processes.—There are many other processes long in use and recently proposed; among the latter the preservation by gases, carbonic acid and sulphurous acid, and the coating of the meat, for the purpose of preservation by the exclusion of air with impervious substances—as for example, paraffine. There is the time-honored custom of smoking, or of a combination of pickling and smoking, which are too well-known to require a rehearsal.

Salicylic Acid.—This was obtained by Pyria, in 1838, from *Spiræa ulmaria*. Subsequently it was discovered in oil of wintergreen, and still later in *Salicin*, obtained from willow bark, whence its name. Finally it was procured from carbolic acid. If pure, it is a white, inodorous powder, but little soluble in water. When it is absorbed in the organism in moderate quantities, it undergoes no change and is speedily removed through the liquid secretions of the system, and its ready elimination in this manner, coupled with its comparative uninjuriousness and great disinfecting powers, make it, therefore, an exceedingly desirable substance for the purpose of the preservation of food. In fact, it is used in large quantities. How and with what results we will see later on. Naturally, also, it has been tried for the preservation of meat. The results, however, did not come up to the standard, at least at the present time. That it does preserve meat for a limited period there is no doubt, but the fact that it does it only for a limited period reduces its usefulness considerably. Yet there are cases where the use of salicylic acid for the preservation of meat is of advantage. In the country, for instance, where fresh meat can be obtained only at shorter or longer intervals, and where it may be desirable to keep this in good condition, its use may come convenient. In order to use salicylic acid for this purpose, we prepare either a concentrated watery solution, which contains about one part of salicylic acid in 300 parts of water, and immerse the previously well cleaned and washed meat into this solution for about half an hour. The meat is then taken out and allowed to dry by hanging it up in a cool, dry place. Instead of doing as described, the dry salicylic acid powder may be well rubbed into the surface of the meat. If the latter process has been adopted, the meat is, just before use, freed from the excess of the salicylic acid by washing. Only quite fresh meat can be benefited by these treatments. It is undoubtedly owing to the great insolubility of the acid that no better results can be obtained with it, and partly, perhaps, also owing to the fact that the free acid combines with the fiber and loses, therefore, the power of penetration. Meat, so treated, is more or less bleached, but this should not deter anyone from giving this method a trial, as it is not apparent in the meat after preparation for the table.

The use of vinegar to keep meat a little while is well-known. Very strong vinegar might preserve meat for even considerable periods, but in this case the flesh loses its grain and becomes softened.

The articles mainly used for the preservation of vegetable substances are sugar, vinegar, salicylic acid, spirituous liquors; also, boric acid in isolated cases, and carbolic acid when the vegetable substances are not to be used as food—as, for instance, in book-binders' paste. Sugar is often used in combination with vinegar or spirituous liquors, while salicylic acid is used with sugar, and as an additional safeguard on the combinations mentioned. Aside from those above named, common salt is used, and also salt and vinegar, for the manufacture of pickles from cucumbers and other vegetables.

Sweet Ensilage.

The various kinds of fermentation that take place in vegetable substances are due to minute plants (*Fungi*) which by their growth set up changes in vegetable compounds. Thus, the yeast plant ferments the bread, beer, etc.; and similar minute plants, which occur in fruit juices, produce wine, cider, etc. The minute plants which produce these forms of fermentation require the access of air that they may perform their functions. There is another group of these minute organisms which multiply in a different manner from those just noted, and which cause the formation of lactic and other acids, which are known as bacteria. These occur in myriads in fresh ensilage, and live and carry on their fermentation when the air is completely excluded from the silo. Dr. Miles' experiments at the Agricultural College at Amherst, Massachusetts, were directed to ascertaining the conditions under which these bacteria live, and how they could be destroyed. He found that the bacteria of lactic fermentation, and of kindred ferments, are killed by a temperature of one hundred and sixteen degrees, if this be long continued; but they are destroyed much more promptly if exposed to a higher temperature of one hundred and twenty to one hundred and twenty-five degrees.

When freshly cut corn ensilage is exposed to free access of air in the silo, the mass heats. It undergoes a process of gentle burning (*cremacausis*), with a rise of temperature which may readily reach to one hundred and fifty degrees. Hence, if the cut fodder lies up loosely in the silo, and that is slowly filled, the filling being continued through several days, a high temperature, from one hundred and twenty-five to one hundred and forty degrees or more, may be easily obtained with an imperceptible loss of fodder, and the same is true of other plants.

Doctor Miles ascertained that the exclusion of air from fresh ensilage, whether packed or not, does not only not destroy the growth of the bacteria of fermentation, but promotes it. The result of this continued growth of bacteria is the conversion of the entire contents of the silo into what is known as "sour ensilage." This is the sourer the older it is. There are a great variety of products from this repressed fermentation, and on exposure to the air the ensilage becomes, in some cases, still sourer from the formation of acetic acid, or vinegar.

It has been ascertained that the exclusion of air from ensilage that has been heated to one hundred and twenty or one hundred and twenty-five degrees, stops all action, and the mass gradually cools down. The bacteria of fermentation are, at this temperature, completely destroyed—root, branch and germ—and the mass remains as if it were in a completely sealed preserve jar. Indeed, the process of ensiloing is much the same as that in preserving fruits in closed jars. By the exclusion of air while the substance is hot, fermentation cannot take place.

The above is essentially the theory as announced by Doctor Miles. After its announcement, cases in which the filling of silos had been, by accident, very slow, in which great heat had taken place, and on this account were supposed to be ruined, were reported; but, contrary to expectation, they yielded sweet ensilage, the best the farmers reporting the cases had ever seen. The odor of the ensilage was positively sweet—like that of molasses—and it was greatly relished by the cows and at the same time it proved to be superior as a milk-producing feed.

After the theory and practice of Doctor Miles were announced, we heard of those of Mr. Geo. Fry, in England, who had been working in the same direction, and had arrived at the same conclusions. Since then, Doctor Miles' views have been confirmed over and over again, here and abroad.

Importance of Cleanliness.

Keeping the pores of farm animals open is as essential to their thrift as bathing is to our health. The skin performs an office more essential to life and health than even digestion; and it is even more important that the horse be thoroughly groomed than that he be fed. Thorough grooming does not mean only the removal of mud and manure from the hair with the comb; it means that thorough brushing and rubbing which will clean the hide, removing all obstruction from the pores. It is more necessary to groom the horse than any other farm animal, because he is the last to groom himself. Cattle will groom themselves to a certain extent; yet there can be no more profitable work than brushing and rubbing them, though it is so rarely done. The hog, reputed to be the dirtiest of all farm animals, is really the most cleanly, and if allowed to do so will keep his hide clean. This he does by first putting on a coat of mud. This he scratches off and with it removes the impurities which have adhered to his hide and which the wet earth has loosend. Wallowing not only contributes to the comfort of swine, but is of the utmost importance to their health.

Arab Horses in England.

Mr. Wilfred Blunt, of Crabbets Park, a large landed estate in the south of England, and who married the granddaughter of the celebrated poet, Lord Byron, in traveling with his lady through Arabia several years ago, selected quite a number of the finest horses to be found there. These he placed on his estate to be bred pure by themselves, for the purpose of seeing whether any increase could be made in the size of their progeny, their speed accelerated or other improvement, yet retaining all their fine style, graceful movement, good temper and docility. Some of this progeny at three years old have attained a height of fifteen to fifteen and one-half hands, and it is expected when full-grown they will reach another half hand—say sixty-two to sixty-four inches. When they come to this, it is his intention to train and race them against the thoroughbred English horses. The pure Arabian, being usually not over fourteen to fourteen and three-quarter hands, is not able in a race to take the great stride of the English horse, standing from fifteen and one-half to sixteen and one-half hands, or an occasional one of seventeen hands; and in doing this they still gather, for their jumps are about as quick as the more diminutive horse.

Arab stallions imported into America for many years past have not added to the speed of our race horse, but what is much more commendable, crossed on the common mares of the country, their progeny has been found a great improvement in finish, grace and spirit, and consequently in value.

The Wagons of the World.

II.—Ancient Wheeled Vehicles.

In the first article of this series we illustrated and briefly described some of the earliest vehicles used by the ancient Egyptians—including a sledge wagon upon rollers—and promised to follow with something about conveyances on real wheels. In fulfilling this promise we shall show that, according to the best authorities, wheeled carriages were in very general use in Egypt at an early period.

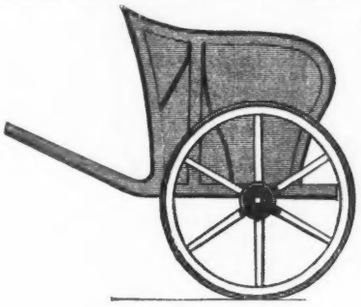


Fig. 1.—EGYPTIAN CAR.

The first wheeled vehicle of any note was called a car or chariot; in the Bible it is translated "chariot." There are paintings and sculptures upon the walls of the temples and tombs of Egypt which have lasted four thousand years, and from these we learn the exact appearance of these chariots. They formed the chief means of conveying man for two thousand years before Christ, and were more or less the type of all other vehicles of the ancient world. In describing them, such technical terms as wheels, naves, felloes, tires, spokes, etc., were used by Homer, who lived a thousand years before Christ, and by Moses, who lived at least five centuries earlier. Moses, in the description of the wheels upon which moved the great cauldron used by the priest, and Homer, in describing the car of the goddess Juno, employed the same terms. In the Iliad we read that "the awful Juno led out the golden-bitted horses, whilst Hebe fitted the whirling wheels on the iron axles of the swift chariot. The wheels had each eight brazen spokes, the felloes were of gold secured with brazen tires all around, admirable to the sight. The seat was of gold, hung by silver cords; the beam (or pole) was of silver, at the end of which was hung the golden yoke and the golden fleece."

These cars (a specimen of which is shown in figure 1), were occasionally square, but more generally semicircular or horse-shoe shaped; the rounded front towards the horses was high, the sides lower; the back was open, and the bottom was near the ground, so that it was easy to step in and out. The wheels, especially in Egypt, were very low—from two feet six inches to three feet three inches in height. The framework of the body was often open, but sometimes closed up with either leather skins, basket-work, carved wood or embossed metal. The pole by which it was supported curved up from the bottom of the bar to the backs of the necks of the horses or oxen, where it was joined to a wooden yoke; this was again strapped around the bodies and necks of the horses, or tied to the horns of the oxen. The addition of bridles and reins would complete the simple harness. Some horses were attached to the pole by an iron bar with knobs at each end, which passed through a ring at the end of the pole, and through a similar ring upon each of the pads or saddles of the horses. This would be very similar to the curricle bars used in modern times, and would allow of more freedom in motion than a fixed yoke would give. The bodies of these chariots were usually small, containing but two persons standing upright. They were very light and could be driven at great speed—nearly as fast as the horses could gallop. Being narrow and therefore suitable to cities in which the streets are still very narrow, and to mountain roads which were often only four feet wide. They suited the period and the people, or their usefulness would not have lasted two thousand years. According to Homer, a strong man could lift a chariot on his shoulders and carry it away. Possibly this would be without the wheels, but even then it could not have been much heavier than one of our wheelbarrows.

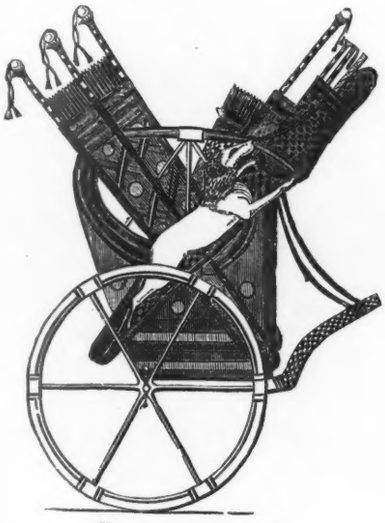


Fig. 2.—WAR CHARIOT.

Some of the bass-reliefs on the walls of a temple at Aboo-Simbel, in Nubia, show a grand display of war-chariots, several with the effigy of a lion on each side, the tails of which curve with the openings, and have elaborately embellished bow-cases. Figure 2 represents one of these battle chariots.

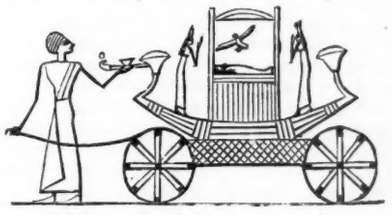


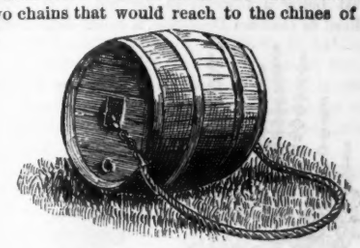
Fig. 3.—FUNERAL WAGON AND BOAT.

From Egypt the use of chariots spread into other countries, and they were largely employed in war upon the extensive plains of Asia. The Greeks used them at the siege of Troy, for all the chief warriors on both sides are described as going into battle and fighting from their chariots. The Grecian chariots were all curved in front, and were rather larger and on higher wheels than those used in Egypt. The Roman nation, as it increased in power, also adopted the car; but it was chiefly used in cities, and for purposes of show and state rather than for daily use. Besides the chariots the Romans had other two-wheeled cars, and four-wheeled wagons of different shapes, and giving different accommodation; but at first they were kept for conveying agricultural produce, and for moving goods and baggage, and the better sorts were reserved for the conveyance of the images of their gods and vestal virgins in religious processions. Then came the triumphal processions of the successful military commanders, and a variety of vehicles conveyed the conqueror, the captives, and the arms and other valuables captured from the enemy.

The ancient Egyptians had sledge hearses, boat hearses, and finally a wagon and boat hearse combined. A singular instance of the wagon and funeral boat in combination has been found on the bandage of a mummy. This curious catafalque is shown in figure 3. It is supposed by some modern authors that Herodotus, in speaking of the religious ceremonies in honor of Mars, as performed in the city of Pamrepis, refers to this vehicle. Be that as it may, the funeral wagon was one of the first vehicles upon which four wheels were used, and the one represented in the above illustration was probably an improvement upon the sledge-hearse.

A Water Barrel its own Truck.

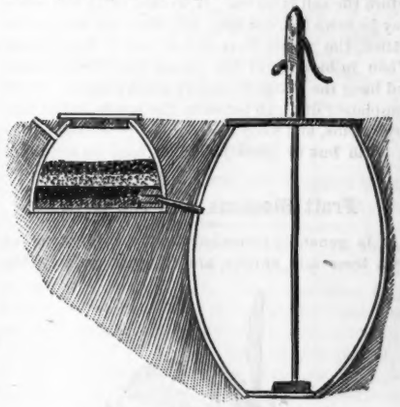
Morris H. Moore, of Kansas, has an excellent way of rolling a barrel, which he describes for the benefit of his fellow readers of the *American Agriculturist* as follows: "I take a coal-oil barrel with two good heads, nail a block on each head in the center, and insert two three-quarter inch log screws in each block to act as axles. To these I attached two chains that would reach to the chines of the barrel, then made a short rope fast to the chains. By this means the barrel may be hauled anywhere and will revolve as a wheel. One person can easily roll a barrel of water in this way." In filling, the barrel must be set on end upon two blocks, and filled by the tap while the air escapes from the air-vent in the upper part of the barrel.



IMPROVED WAY OF ROLLING A BARREL.

Cistern and Filter.

In Alleghany Co., Pa., where the rain-water is supposed to require filtering, if it does anywhere, the filter represented in our illustration is successfully used by Mr. Philo S. Dilworth, a subscriber to the *American Agriculturist*. "Rain water standing for months in impurities and filth," he writes, "cannot be purified by simply soaking through a brick wall, but should be filtered as soon as it falls. I enclose you a sketch of the best cistern and filter I ever saw. The main cistern is made egg-shaped, to hold one hundred barrels. The filter is flat-bottomed. The end of the pipe from the filter to the cistern is built solid around the end with brick. All water has to pass through the brick. The filter is filled half full with charcoal, sand and gravel in layers—one layer of each—the charcoal covering the bricks, then sand and gravel on top. The water, as soon as it falls, begins to filter and passes into the cistern, where it stands free of all impurities, sweet as spring water. I know this plan to be so superior to all others that I hope to see you try it and figure it in an early issue.



COMPLETE CISTERN AND FILTER.

The filter is built to hold twenty-five barrels of water, but is half full of the filtering material."

SOWING EARLY CROPS LATE.—Those who make but a single sowing of garden vegetables, deprive themselves of a great deal of variety on their tables. Take string or snap beans for example—by sowing every two weeks, a continuous supply may be had until frost. The same is true with sweet corn, and, in some seasons, with peas. It is well to select the earliest varieties for the later sowings. Beets, the early kinds, afford good greens in the hot months.

The Sweet Basil.

As a general thing, our gardens do not show a great variety of what are called "sweet herbs," or those aromatic plants used for flavoring in cooking. Sage, thyme, summer savory, and sweet majoram, are all that are usually grown. The French housewife could not well do without Tarragon and Basil, the last being a favorite in Europe. The common Basil is *Ocimum Basilicum*, a much-branched,

SWEET BASIL.

annual herb of the Mint Family, with minute white flowers in whorls. The engraving shows the manner of branching, and a single stem with the flowers. The name Ocimum is from the Greek, and refers to the odor of the plants, and Basilicum is from the Greek word for royal. In India the Basil is regarded as one of the most sacred of herbs, which has the power to protect those who cultivate it from all evil, etc. We have seen it cultivated in old flower gardens for the sake of its perfume, under the name of "Bergamotte." Its proper place, however, is in the kitchen garden, with thyme and similar herbs. The flavor of Basil is quite unlike that of any other of the herbs used for seasoning, reminding one of cloves. It is esteemed by those who are acquainted with it for flavoring soups and salads. There is a restaurant in New York City, celebrated for the excellence of the meat salads served at its lunch counter. This excellence is solely due to the use of Basil in the dressing. There are several varieties offered by the seedsmen, but there is no essential difference between them. Being tropical plants, the seeds should not be sown before the soil is warm. If wanted early, the seeds may be sown in a hot-bed, and when the weather is settled, the plants may be set out a foot apart. When in bloom, cut the stems near the ground, and hang the plants in an airy room to dry. When completely dry, rub between the hands, reject the large stems, and keep the coarsely powdered leaves in a tin box or glass jar, to be used as required.

Fruit Blossoms and the Bees.

It is generally conceded that the blossoms of fruit trees and shrubs, are of great value to the

SECTION OF RASPBERRY FLOWER.

apiarian, in affording the bees both pollen and nectar, but it is not so generally known that the service is reciprocal, and that the visits of the bees are of real value to the fruit-grower. If the bees, in visiting the fruit blossoms, gather nectar and pollen, they at the same time make sure that the fruit-grower shall have a more abundant crop of fruit. The raspberry, which we take as an example, is regarded as one of the most valuable honey-yielding plants among our fruit-producing shrubs. Flowers secrete nectar, largely to induce bees and other insects to visit them, in order that these, in searching for nectar, may properly fertilize them, by conveying pollen to the stigmas of the pistils, either of the same or another flower. The organ of the flower which contains the sweets (nectar) is much varied in shape, and is so placed in reference to the other parts of the flower that a bee in extracting its nectar will either get dusted with pollen, or leave some on the stigmas, and fertilize the ovules. The engraving gives a raspberry flower with a portion cut away, to show the position of the parts. The calyx is represented by two of its sepals, the lowest part with its tips curved downward; next within these, are two small petals, *P*, and the next to these are the stamens, the anthers of which, *A*, furnish pollen. The pistils are numerous and piled up in the center of the flower in a cone-like form; the ovary of each pistil, *D*, when ripe will form a "grain" of the so-called berry. The styles of these pistils, a few of which are seen at *S*, have no conspicuous stigmas. At the base of the cone of pistils are the openings of the nectaries, represented by dots. The bee, in its search for nectar, alights upon the cone of pistils, and reaching with its long tongue, goes rapidly from one nectary to another; in doing this, it makes a revolution, which brings its body in contact with the anthers, and more or less pollen adheres to it. When the bee visits the next flower, it rotates in the opposite direction, delivering the pollen upon the stigmas, to fertilize the pistils with pollen from another flower. Indeed, in doing this, it often brings pollen from another plant, and thus secures cross fertilization, which is so desirable. The more the relation between insects and plants is studied, the more beautiful it will appear. The plant yields nectar and pollen, required by insects, and especially by bees in rearing their young, while in return for this, the insects make sure that by fertilizing the pistils of the flowers there shall be a full crop of fruit.

The Evening Primroses

When the owner of a Night-blooming Cereus is so fortunate as to have a flower about to open, he gives notice to his friends, who gladly come to witness the blooming. It is worth going far to see a bud spread its parts and unfold into a grand flower. But one can see the same thing—the sudden opening of a bud—in a common weed, and in several cultivated flowers. The common Evening Primrose (*Œnothera biennis*) is found almost everywhere. As its name indicates, it is a biennial; the first year it produces a tuft of showy leaves, and the second year it shoots up a stem three to five feet high, having numerous yellow flowers, which suddenly open at dusk. If the buds are gathered when well advanced they will open when placed in water, or even while held in the hand, to the great surprise of those who have never before witnessed the phenomenon. This Evening Primrose is common along road sides, in fence corners and wherever weeds are allowed to establish themselves; a number of varieties have been obtained from it, one of which, offered by the seedsmen as *Œnothera Lamarckiana*, is really worth growing. Like other biennials, the seeds must be sown this year in order to have the flowers next year. It forms a large, much-branched plant, and bears a profusion of yellow flowers which are three or four inches across. To watch a plant as it opens its flowers at dusk is exceedingly interesting. By cutting the branches and placing them in water the exhibition may be enjoyed indoors. An excellent species for the garden is the Missouri Evening Primrose (*Œnothera Missouriensis*), a perennial with a large root, from which arise numerous prostrate stems, which produce leaves and very large flowers, which open just before sunset. The flowers often have a spread of six inches. The engraving, fig. 1, shows the habit of the plant. There are in the far West a number of white-flowered Evening Primroses which open suddenly at dusk, and in fading become rose-colored. The writer recollects going into camp in what is now Arizona, where the only requisite to be considered was water. A more desolate site for a

Fig. 1.—MISSOURI EVENING PRIMROSE.

camp could not be imagined; not a tree nor a shrub was to be seen. As the sun went down white stars began to appear on the ground. A great number of Evening Primroses, the gray foliage of which made them inconspicuous, began to open with astonishing suddenness, and made our apparently desolate camp as gay as a horticultural exhibition. The Godetias of the catalogues properly belong with *Œnothera*, of which they form a section. They are all annuals belonging to the Pacific coast and open in the daytime. Their petals have a remarkably satiny luster and present pleasing shades of rose and purple, though some are pure white. Florists have obtained some excellent varieties from the wild forms, one of which, "Lady Albemarle," shown in figure 2, is one of the most esteemed.

KEEP THE SOIL OCCUPIED.—Many fail to make the most of their gardens by not following one crop, as soon as it is cleared off, with another. One

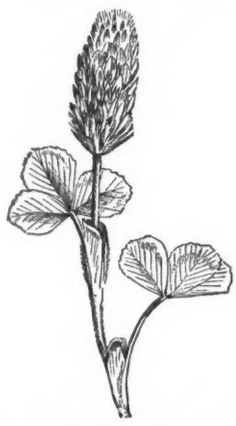
Fig. 2.—EVENING PRIMROSE "LADY ALBEMARLE."

of the chief points in the success of a market gardener consists in keeping his soil constantly at

work for him. He knows that something will grow; if not a paying crop, then one of weeds; hence, as soon as an area is cleared, it is planted; if not with a crop to be sold, then with another to bring him money indirectly, by being turned under to manure the soil. Rye is perhaps the best crop at the North, but at the South, the Cow-pea is to be preferred.

The Carnation or Crimson Clover.

The clovers generally cultivated are perennials, but the crimson clover, a native of Southern Europe, is an annual. It grows about two feet high, bears a fair amount of herbage, and its branches are terminated by oblong clusters of very brilliant flowers, which have caused it to be called "Carnation," "Crimson" and "Scarlet Clover." Indeed, so showy is it in flower that it is frequently cultivated as a border annual. The engraving shows the leaves and a flower head reduced in size. As an agricultural plant it was introduced from Italy, its native country, both into England and this country at the same time, in the early part of the present century. In England it has sometimes been found useful as a "catch crop." That is, the seed sown and harrowed in on a wheat or other grain stubble, makes a sufficient stand to endure the winter and matures a crop which can be taken off sufficiently early to allow the land to be sown with turnips to succeed it. The introduction of a new rotation may bring a plant into new importance. The farmers of England, with whom the crimson clover has not heretofore been held in high esteem, have found, since the ensilage of fodder crops has been introduced, that they have in the



CRIMSON CLOVER.

Carnation Clover a plant that may in a measure compensate for the lack of our great ensilage plant, Indian corn. Mr. George Fry, author of the most important recent contribution to the literature of ensilage, speaks of it thus: "Then, again, there are many excellent fodder crops, such as *Trifolium incarnatum*, in my opinion the finest of all British fodder crops." Ensilage, of course, introduces new methods, and will turn our attention to new plants, and we call attention to Carnation Clover as one of those the merits of which may have been overlooked, and which may come into common cultivation with us as it has done in England.

Home Plants.—The Oleander.

We say "home plants," instead of house plants, intentionally. Most of our readers can recollect when a family owned a plant, which grew up with the children, had been placed on a sunny piazza in summer and, as winter approached, had been taken to the cellar or other frost-proof place. These plants may have been a Lemon, an Orange, a Pomegranate, or often an Oleander, but it was a living thing, that went to sleep with the winter and put forth a new growth in the spring. Its blooming recorded Elsie's birth, and its going to rest was the day on which little John was laid away to his rest. There are thousands of these home plants all over the country, which speak only to the owners thereof. The growing of these home plants is less common now than it was a generation or two ago, yet we occasionally see them,

Fig. 1.—FLOWERING BRANCHLET OF OLEANDER.

especially in country houses, and they are always viewed with interest. One of the commonest of these is the Oleander (*Nerium Oleander*), which has been in use as a home plant for generations. The ease with which this may be propagated, has allowed a bit of the old plant to be taken to the new home, when a daughter married. The showy flower, seen in midsummer, is shown in figure 1. If a piece of young shoot, as in figure 2, be placed in a bottle of soft water and exposed to the light, it will, after a few weeks, throw out roots, and if it be then transferred to a pot of rich soil, and shifted to a larger one as needed, the tiny plant will in time become as large as its parent. It only requires to be kept from actual freezing in winter to continue to bloom, year after year, a link to connect the housemother with the home of her happy childhood.

A Wild or Native Garden.

Mr. Rexford, of Wisconsin, who is an ardent lover of plants, and especially of native plants, writes us: "I wish I could get the children interested in a wild or native garden; a garden composed wholly of such plants and shrubs as they can find about the fields and woods. Once begun, the task of collecting these plants would be a most pleasant one. We ought not to be ignorant of our own flowers, but most persons are. In one corner of my own garden I have planted native shrubs and other plants, and among other things are Golden-rods and Asters growing together in a most friendly way. Now, one would suppose that few persons were unacquainted with these flowers. I presume that nearly every one who has spent an

Fig. 2.—YOUNG SHOOT OF OLEANDER.

autumn in the country, has seen them in an unseeing way, merely being conscious of the existence of some yellow and purple flowers in the fence-corners and on the hills. They have not taken pains to see anything more. But they have come to my door to ask what those flowers were in the corner of my garden, producing such a magnificent effect of color. When told, they looked half incredulous, half as if they had been trapped into admiring something unworthy their admiration. I have growing with them wild roses, which are to me more lovely than the great flowers on our hybrid-perpetuals, Bitter-sweet, Virginia Creepers Clematis, Lilies, and dozens of other wild plants that cost me nothing but the labor of getting them. Last year a despised Mullein took up its habitation there, and it showed everybody that it was not without some graces of its own. What is offered by seedsmen as "wild garden seeds," are not seeds of wild flowers, but a mixture of many varieties of garden flowers.

Children, go to work and see what a charming garden you can make out of the plants you can find growing about the farm. You can have a little horticultural society of your own, and it will afford you much pleasure and profit. Try it.

"Pourpier Vert."

French seed catalogues are very attractive, both in their engravings and in the descriptions they give of the plants. If one should be attracted by the picture of *Pourpier Vert*, and the statement that it was "most excellent as spinach," he might be disgusted to find that *Pourpier Vert* was the self-same plant that he had fought summer after summer as "Pussley," the *Portulaca oleracea* of botanists. It is an abundant, fast-growing weed in this country, so common, indeed, that its good qualities are overlooked. Take the ten-

"POURPIER VERT."

der, quick-growing shoots of this despised weed, "pussley;" boil in water until quite tender, and then dress with a sauce of butter, flour, etc.; it will be highly esteemed as *Pourpier Vert*, but, presented as "Pussley," might be regarded as a weed, and fit only for the pigs. The writer was once in a wilderness country, where there were no vegetables but wild ones. By pointing out the wild species of "Pussley" and "Pig-weed," or "Lamb's-quarter," to the cook, he was able to keep the party in health, and to afford a welcome variety to their food.

To Find Contents of Box or Rectangular Tank in Gallons: Find the contents in cubic inches and divide by 231. Thus the number of gallons in a tank eight feet square and three feet deep, would be found by multiplying continued product of the three dimensions, viz., 192 cubic feet by 1728, which gives 331,776 cubic inches; divide this by 231, and we have 1436.26 gallons. Another, which is approximately correct is: Divide contents in cubic feet by .1⅓ (.1337). In example above we have 192 divided by .1⅓ (or multiply 192 by thirty fourths) equals 1440 gallons, an inconsiderable difference in most commodities.

THE HOUSEHOLD

Some Good Recipes.

TOMATO SOUP.—To one quart of boiling water add one quart of tomatoes; boil again and put in one teaspoonful of soda; as soon as it has ceased foaming, add one pint of milk, four rolled crackers, butter, pepper and salt, and serve very hot.

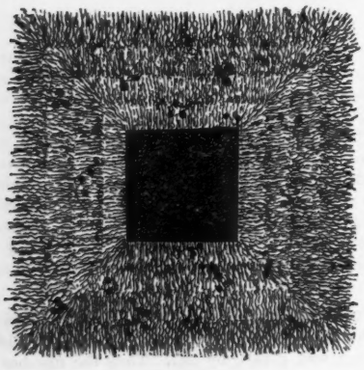
A NUTRITIOUS BROTH.—A quarter of a teaspoonful of beef extract, the yolk of an egg beaten up, a cup of boiling water, a little salt added, and served with a slice of hot toast, makes a palatable and nutritious luncheon, and an excellent repast for invalids.

VEAL SALAD.—Mix one half teaspoonful of mustard with half a cupful of vinegar. Beat the yolks of two or three eggs, with a little salt, until they are quite thick and light, then, stirring briskly all the time, slowly add two or three tablespoonfuls of best salad oil, and four tablespoonfuls of rich, thick, sweet cream. Then add mustard, vinegar, salt and pepper to taste, and some very finely chopped parsley and tarragon. Pour this sauce over a heaping plateful of cold roasted veal, cut into pieces about an inch long and a quarter-inch thick, cover tightly and let it stand in a cold place for an hour or two. Serve on a platter and garnish with sprigs of crips parsley and slices of a hard boiled egg.

COFFEE CREAM.—Beat one quart of rich, sweet cream to a stiff froth, like the white of eggs for icing; then mix with one-quarter pound of granulated sugar, and shortly before serving, beat into it one cup of cold coffee extract, which has been made by slowly filtering two cups of boiling water through two ounces of finely ground coffee. Serve in a glass dish, with lady fingers or fresh sponge cake.

A Pretty Lamp Mat.

Now that lamps are so much used, pretty lamp mats are needed upon which to set them. Especially where there is no cloth over the table, its polished surface will soon be marred, unless protected by a mat. The beauty of the mat here described lies in the blending of colors. The mat is made of four shades of olive-green worsted, knit in garter-stitch, on medium-sized needles, into a strip three yards long, and eighteen stitches wide. This is dampened and ironed, then one edge is cut



PRETTY LAMP MAT.

off and raveled out to within a quarter of an inch of the other one; this is left to be sewed on by. The bottom is made of a piece of pasteboard about nine inches square, and covered on both sides with some dark material. The raveled strip is sewed into this in rows, commencing from the outside with the darkest shade, each row lapping sufficiently to hide the edge of the previous row, where it is sewed, as shown in the engraving.

A Splasher for the Wall.

This splasher, to go upon the wall behind the wash-stand, is entirely new and exceedingly pretty. It can be made of plain cream-colored linen or of momie cloth. It is twenty-two by thirty-three inches, is fringed out at the bottom and has two rows of drawn-work above. The cross threads are caught together with blue working cotton. The spaces between are filled with fancy stitches, worked with the blue. An appropriate design is stamped on the upper part, which is also worked with the blue cotton. A narrow hem finishes the top, which is turned under so as not to be in sight, and small brass rings are sewed on the corners by which to fasten it on the wall, using a couple of tacks. Bows of a bright shade of blue ribbon are placed over the tacks at each corner, to hide the fastenings.

A Handsome Lamp-Shade.

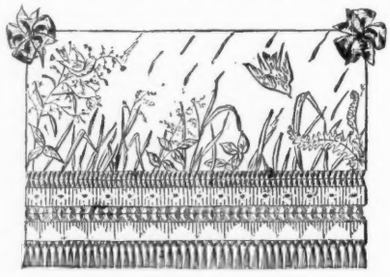
A pretty and easily-made lamp-shade is shown in this illustration. It is made of strips of satin ribbon and lace insertion of equal widths. The

HOME-MADE LAMP-SHADE.

pieces should be an inch longer than the porcelain shade, and made pointed at one end by turning under the corners and catching them together on the wrong side. The pieces are then neatly overhanded together, and a lace edging to match the insertion sewed in at the top. A little tassel made of silk, the color of the ribbon, is attached to each point. A fine cord made of the silk is run in at the bottom of the lace, to draw it around the neck of the porcelain shade. A tassel is fastened on the ends of the cord, and it is tied in a bow on one side. Ribbon of any other color can be used for this shade, but a buff or pink will be found the prettiest.

Bathing.

There are thousands of pores to each square inch of the skin of the higher animals. The office of these pores is to serve as outlets for the dead, offensive matter secreted by the glands of which they are the mouths. So much has been written about the offensive matter thrown off by the lungs and the contamination of the air thereby, that people are usually well informed as to the necessity for ventilation; yet the skin throws off, naturally, a greater amount of impurity than the lungs throw off. The skin and lungs throw off impurities in the relation of eleven to seven. But if the pores be closed, these impurities can not be thrown off by the skin. Whenever there is any check on this work of the skin, greater work is thrown on the lungs and kidneys; and this soon overtaxes them, they are unable to accomplish all required of them, the blood becomes poisoned, and disease results. This has been demonstrated by Dr. Fourcault, who experimented in the suppression of the perspiration of animals. Just as the perspiration was interfered



WALL SPLASHER.

with were the evil effects manifested. The excretory action of the skin was entirely stopped by varnishing the animals; and this invariably produced speedy death. Any suppression of this action of the skin must produce a greater or less diseased condition of the body, since the blood can be kept pure only when the skin performs its functions properly. It has been well said that the great secret of preserving health is maintaining a healthy action of the organs that carry off the wastes of the system.

The matter exuded from the glands of which the pores are the outlets, is of a sticky nature, and not only has it a tendency to adhere to the edges of the pores and close them, but it also holds the dust that falls upon it. In the summer the pores are closed most rapidly, because then the perspiration is most profuse, and there is the most dust in the atmosphere. The filth that clogs the pores can be removed most easily by the use of soap and water, or bathing. Hence bathing often enough to keep the pores open is essential; and it should be most frequent at this season. A house in the city is not considered complete without a bath-room; yet very few farm houses have such a room, although the farmer should bathe oftener, perhaps, than any other person. The absence of bath-rooms in our houses shows our indifference to one of the most important methods of maintaining our health. The cost of a bath-room is but little, and every house should have one. But its lack is no excuse for not bathing. We can at least have a tub. And while we know that many of our readers will be incredulous when we say it, yet we know that the sounder sleep and greater bodily vigor attained through bathing makes it profitable ten-fold from a labor standpoint alone, not considering the gain in comfort and health. We know this, because we speak from our own experience of years on the farm.

Handy Wall-Pockets.

The pockets shown in the engraving are intended to be hung on the inside of a closet door, or in some other convenient place, where dust-cloths,

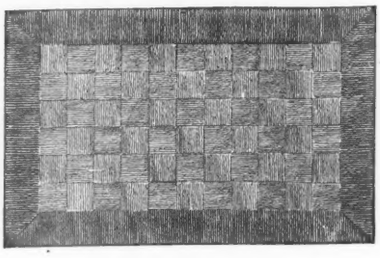
CONVENIENT WALL POCKETS.

whisk-brooms, etc., can be easily found. Any suitable material can be used to make the pockets, but cretonne or calico are preferred, as they shed the dust. Take a piece of goods, double for the back, measuring thirty inches by seventeen. The piece which forms the pockets, should be forty-two inches by eleven. This is bound with brown braid, and has a row of feather-stitching in brown

worsted below it on one side. It is divided into four equal parts, and basted on the back; the extra fullness is laid in plaits on each side of the pockets, which have a double row of stitching between them, and confined at the bottom by binding it and the back together. The sides and top are also bound with the fancy stitching inside. Four straps of the braid are sewed on the back with a brass ring slipped on them to hang it up by.

A Home-Made Rug.

An elderly lady designed the rug shown in the engraving, and has been kind enough to allow us to illustrate it for the benefit of our housekeeping



HOME-MADE RUG.

readers. It is really the prettiest home-made rug that we have seen. It is made of woolen rags, which are carefully cut into strips three-quarters of an inch wide, on the bias if possible. These are sewed together as one would sew carpet rags. The middle of the rug is formed of sixty-six blocks, each an eighth of a yard square, knit from the rags in plain knitting stitch. These are joined so that every alternate one is reversed—that is, the ribs formed by the knitting, run horizontally in one, and vertically in the other block, as seen in the engraving. The border is knit six inches wide, of a solid color, dark-red or maroon; this is joined to the rug, the corners being mitred and sewed together. The center, only, is lined with bed-ticking.

Summer Millinery.

So numerous and so varied are the shapes of both bonnets and round hats that one can hardly go astray in selecting; while every woman must be able to find something becoming and suited to her own particular style. High crowns, however, are a fixed fact, and the fashionable garniture massed higa in front increases the tall effect. Bonnets are rather small and have high, slender bows, and many loops of feather-edged ribbon set on top, in the midst of which is nestled a posy of two or three kinds of flowers with long stems. The ribbon loops are short near the front of the bonnet, and two sets are flattened against each other, while those further back are long, and extend over the crown. The only other trimming is the ribbon crossed at the back, which comes down to the ears and forms the strings. Another style is to set two rosettes of narrow ribbon or velvet, a fourth of an inch wide, on the top in place of the high bow. These rosettes may be of two colors, as pink and green—a fashionable combination this season—and are made to extend from the brim to the top of the crown. They are much longer than they are wide, and formed of very thickly clustered loops. For dressy bonnets of fine straw, tulle, or crape coronets are largely used. These are sometimes of flowers, but more often of small beads, either jet, pearl, or crystal, strung on fine wire in the shape of leaves, and arranged high in the centre and narrow on the sides.

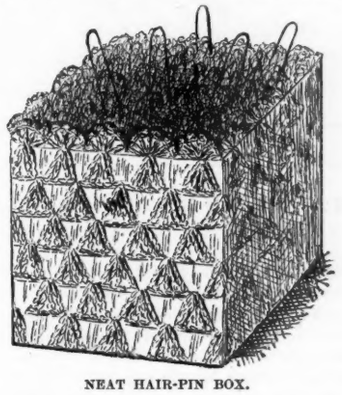
Black bonnets have the edges bordered with bright jet, rosary or dead mourning beads. Young ladies wear small pokes without strings; also, dark straw bonnets with flower fronts. The brims of the latter are composed of pink or yellow rose petals, massed together and veiled with tulle; or else of small blossoms, such as daisies, lilacs and forget-me-nots, the same flower being repeated in the bow of ribbon that forms the trimming. The crowns are rough-and-ready blue, brown, or black straw. In round hats, a decided preference is shown for turbans and toques, the latter being what was formerly known as the "pork-pie," and are now trimmed with cords and stiff military pompons. The turbans are high and narrow, and very eccentric in style, sometimes coming with depressed crowns, sometimes with a slash through the centre, and again with the front higher on one side than the other. In trimming these at home, care should be taken to follow and carry out the design of the hat. Those with a turned-up brim are most generally becoming, particularly if they are faced with velvet. Like the bonnets, these are trimmed with high bows in front, either with or without a floral spray. For these bows, gros-grain ribbon with a picot edge is most in vogue, and either number twelve or sixteen the proper width. Two yards and a half are required if a spray is added; three yards, if without. High loops are set directly in front, and are sometimes wired to make them stand more upright, and short-fringed ends fall backward over the crown. A narrow band or twist of velvet extends around the hat.

The new French hats, however, reverse all this. They are quite large, with broader brims, and the trimming of ribbon is placed on the back, leaving the fronts of the high crowns bare, or with merely a narrow band around them. Half-long ostrich plumes extend from the back or side, and nod æsthetically toward the front. Among these large hats, the picturesque Gainsborough shapes are also shown again; trimmed with masses of creamy lace and, of course, long feathers and curling tips—for what would the wide-brimmed hats be without graceful waving plumes!

A Box to Hold Hair-Pins.

A tin box with a crocheted cover, stiffened and gilded, makes a very pretty little receptacle for hair-pins. It is filled with curled horse-hair, and has a knitted cover. The top is made of zephyr, by knitting one row plain, and every other one by winding the zephyr around the first finger four times, and knitting it in. That makes a fluffy and soft material, into which to stick the pins. The cover is crocheted of macrame cord, in shell patterns, to fit over the box. It is first stiffened with cold starch, and gilded when it is dry.

Pretty scrap baskets are made by crocheting a cover to fit over a pail. This cover has to be stiff-



NEAT HAIR-PIN BOX.

ened and dried over the pail; then two coats of shellac varnish are to be given it.

LEMON ICE CREAM WITHOUT CREAM.—Dissolve one pound of granulated sugar in one quart of water; rub the skin of two large lemons well off on some lumps of sugar which, with the strained juice of four lemons, add to the water; then beat twelve eggs into it. When all is well and smoothly mixed, put it in a deep preserve kettle, placed over a slow, coal fire, and beat it rapidly and briskly with an egg-whisk from the very bottom of the kettle, until it rises very high, thickens and begins to adhere to the bottom; then take the kettle from the fire, and continue to beat its contents until cooled; then pour into an ordinary freezer, or better, a ball-shaped mould; pack in finely crushed ice, well mixed with plenty of coarse salt and saltpetre, and let it stand three or four hours. Turn out the same as ordinary ice-cream.

A Baby's Slumber Robe.

The slumber robe for a baby, is to slip on after its bath, and while taking a nap, to be used in the place of coverings, which are apt to be thrown or kicked off. It is made of cheese cloth, like tufted crib comforters. First cut two layers of cheese cloth, in the shape of a very loose wrapper; baste a layer of cotton batting between these, and stitch up the seam. Tuft it with pink or blue worsted, turn the edges in, and buttonhole stitch it around the edge with the same. It is tied together with ribbon to match the worsted.

"Blue Monday."

E. H. LELAND, AUTHOR OF "FARM HOMES."

How to make Monday easier in those homes where the house-mother does her own work, and, perhaps, has a dairy and a baby to care for, is a question well worth consideration. I know a woman who does the washing for five persons, and always has her clothes out on the line by nine o'clock. By noon, kitchen and dining-room are in nice order, and a good dinner in readiness for her two children and the two men-folks.

I give her way of managing Mondays, for it seems a very easy one. First—She always does a large baking and boils or roasts a large piece of meat on Saturday, in order to have plentiful provisions to draw upon through Sunday and Monday. Second—In a large stone jug she keeps this washing compound, which is quite inexpensive and does not injure the clothes: One pound of potash dissolved in a gallon of warm water, and half an ounce of sal ammonia.

Sunday night she puts the less soiled of the white clothes in a tub of clear rain water, and the remaining ones in another. Then she plans an easily prepared breakfast, such as potatoes warmed up in cream, boiled eggs, oat or wheat grits, white and brown bread, cold meat and coffee. Monday morning while breakfast is being prepared and eaten, she has three pails of water heating in the wash boiler. After breakfast she adds to this water—which is at scalding heat—a small cupful of the washing compound, and puts in the less soiled clothes, covering them closely. While they simmer for twenty minutes, she clears the breakfast away (the bed-rooms being aired as soon as the occupants are out of them) and attends to the milk and cream in the dairy. Then she removes into clear water the clothes from the boiler, and puts in the balance of the white clothes. While they are scalding she puts the first batch through two rinse-waters, and they are ready for the drying line. The second batch generally needs a little rubbing of collars, wristbands and the like, as they are rinsed; otherwise they are swung to the breeze as speedily as the first. The boiler suds, when cool, may be poured around the roots of roses, currants and fruit trees with good results. The rinse-water, with half a cup of the washing compound, is used for washing the colored clothes and for mopping the kitchen floor.

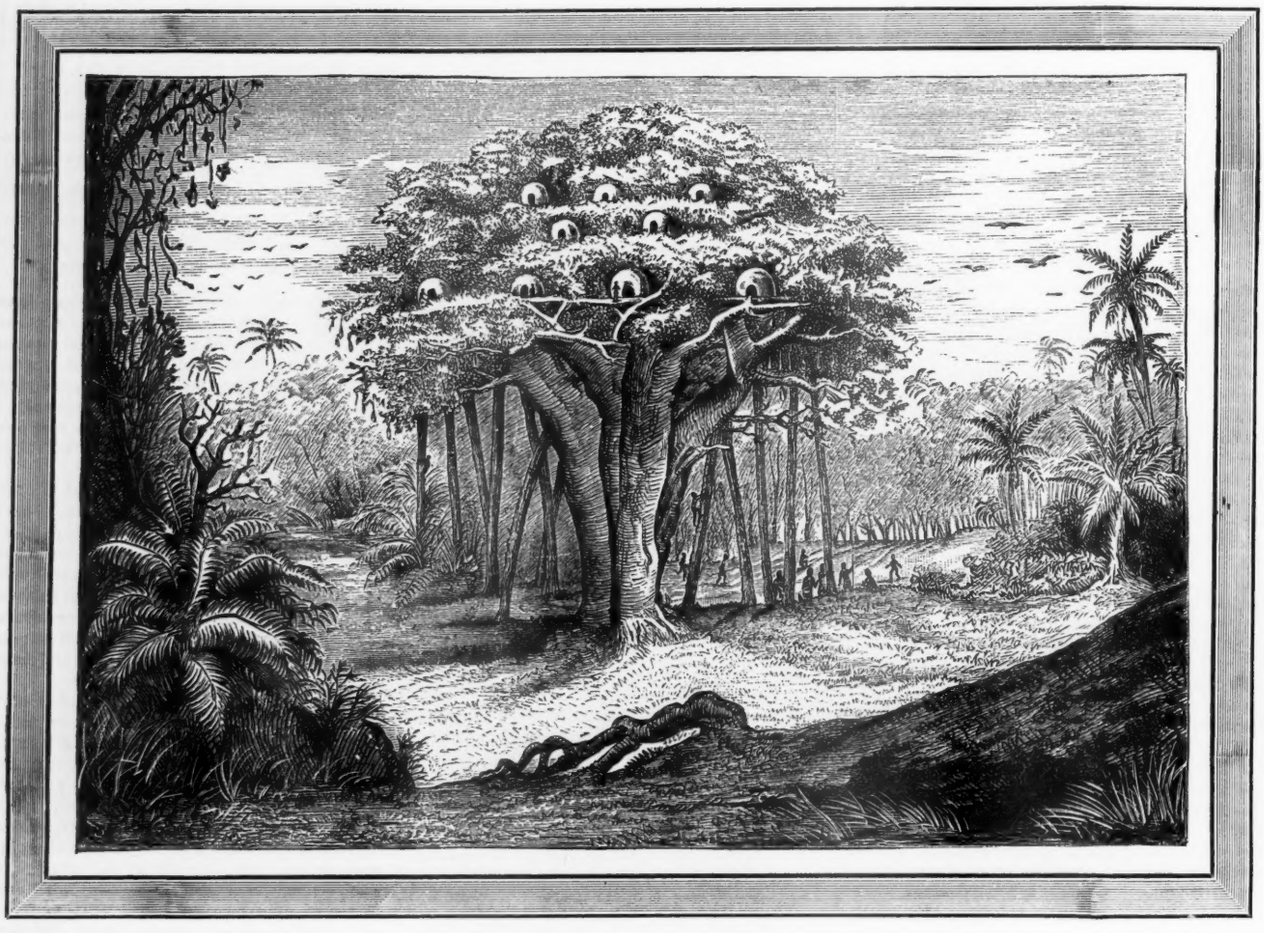
About half-past nine this manager of Mondays makes herself take a little fifteen minutes rest, and a cup of tea with a slice of bread and cheese, after which she feels quite fresh for cleaning the kitchen and getting dinner. She has learned the wisdom of letting the bed-rooms wait until after dinner on Mondays. The extra airing of the beds does them no harm, and she is saved the over-exertion and nerve-tension of trying to do everything all at once.

BOYS & GIRLS' COLUMNS

The Wonderful Baobab; or, People who Live in Trees.

CAPTAIN WILLIAM PINTO.

We read wonderful stories of the immense trees one sees in California, but they sink into insignificance beside the Baobab tree which I found in many parts of Western Africa, principally just south of the Desert of Sahara. It is not distinguished for its extraordinary height, which rarely reaches over one hundred feet, but it is the most imposing and magnificent of African trees; many, it is said, are hazarded as the term of life of some specimens. It has extraordinary vitality; the bark, which is regularly stripped off to be made into ropes, nets for fishing, trapping, and native clothing, speedily grows again. No external injury, not even fire, can destroy it from without; nor can it be hurt from within, as specimens have been found in full splendor, with the inside of the trunk hollowed out into a chamber, which could hold a score of people. One-half of the trunk may be cut or burned away—even the tree may be cut down, and while lying on the ground, so long as there is the slightest connection with the roots, it will grow and yield fruit. It dies from a very peculiar disease—a softening of its woody structure, and it falls by its own weight a mass of ruins. The native



THE WONDERFUL BAOBAB.

Engraved for the American Agriculturist.

over one hundred feet in circumference, rising like a dwarf tower from twenty to thirty feet, and then throwing out branches like a miniature forest to a distance of one hundred feet, the extremeties of the branches bending toward the ground. The botanical name of this curious tree is *Adansonia digitata*. The first, in honor of its discoverer, Adanson; and the second, descriptive of its five-parted leaf. The leaves are large, abundant and of a dark-green color, divided into five radiating lanceolate leaflets. The flowers are large and white, hanging to peduncles of a yard in length, which forms a striking contrast to the leaves. The fruit is a soft, pulpy, dry substance about the size of a citron, enclosed in a long, green pod; the pulp between the seeds tastes like cream of tartar, and this pulp, as well as the pressed juice from the leaves, is used by the native Africans for flavoring their food. The juice is greatly relished as a beverage, and is considered a remedy in putrid fevers and many other diseases.

The Baobab tree is said to attain a much greater age than any other tree, thousands of years being

villages are generally built around one of these immense trees and under its far-spreading branches, which form an agreeable shelter from the sun, is the "Kotla," or place of assemblage, where all the public business of the tribe is transacted. The circuit described by the extremities of the lowermost range of branches is fenced around, so that none but those privileged to attend these meetings can intrude. In thinly populated districts of Southern and Central Africa, where lions, leopards, and hyenas abound, the natives live in huts like gigantic bee-hives, firmly fixed among the large branches of the tree. On the approach of night they ascend to their huts by means of rude ladders, while the lions roar about their camp-fires until the approach of day drives them to their lairs.

As many as thirty families have been found to occupy a single tree. In many instances, natives who till the ground at any great distance from their tribe, build these huts for nightly accommodation. In traveling through the country one frequently sees these trees alive with baboons and other kinds of

roar, etc., so much so that I found it an impossibility to sleep; finally, the most horrible squeals broke out directly under me; it was very dark and being unable to see any objects but knowing something was wrong, threw a can containing water out of the hut door down in the direction from where the noise proceeded, but with little results, though the squealing became fainter; in the morning a small pig we had been keeping and put in a pen over night was missing. What took him nobody ever knew, as no traces remained; it only went to illustrate how we might have fared had we been camping on the ground. Having found a friendly tribe who placed their huts at our disposal, this saved us much anxiety of mind, and a few days later a number of their men accompanied us a considerable distance to the south, not, however, going outside the precincts of their country.

This wonderful tree is also found in India, and is there held in great veneration by some natives, so much so that any one guilty of cutting the trees down, is regarded by them with great abhorence.

the monkey tribe, busy in collecting the fruit and indulging in ceaseless gambols and chatter; for this reason it is commonly called the monkey bread tree. When the tree is not occupied as a habitation, the hollow trunk serves by the natives as a sepulchre for executed criminals—the law of the people denying them the right of burial, inside of which the bodies dry up and to a great extent resemble mummies. To a European, this tree is a marvel; coming across one inhabited by monkeys, it is extremely dangerous to shoot any unless one is with a party, for if any are wounded, the whole colony take up the battle, and more than once I found that a retreat in short order was necessary.

My first experience of living in the air was very novel; the first night was one continual growl,

In A Trap.—A True Story.

EBEN E. REXFORD, WIS.

Brave and courageous deeds are being done about us daily, which the world outside seldom hears of. One of these deeds has lately come under my observation, and I am going to tell the boys who like to hear true stories, what another boy has done.

On a small "homestead" farm, in one of our Western States, lives "Uncle" Joe Sampson. It is about five miles away from a village, and is a rather lonely place in the woods, with no neighbors nearer than two miles. Last fall a nephew of Uncle Joe's came from the city to visit him. Willie Dane was about fourteen, a quick-witted, courageous fellow, who had never been "in the woods" until that season. He brought a gun with him, and Uncle Joe, who is a great hunter and trapper, took great pleasure in showing his nephew how to hunt deer and such other game as abounds in the locality in which he lives. When the corn began to mature, Uncle Joe discovered "signs" of bear.

"I'll have to get the old trap out and clean it up;" he said to Willie. "When the corn gets ripe I think we shall be able to catch a bear or two. They'll come into the cornfield for something to eat, for the beechnuts and acorns will be gone by that time, because there isn't many this year."

So the old trap was brought down from the shed-loft, and Uncle Joe oiled its stout spring and made such repairs on it as were necessary, and pronounced himself ready for Bruin whenever he was driven by hunger to seek food in the cornfield.

"I think it must be a pretty hard job to set the trap," said Willie, as he looked it over. "I don't see how you go to work to crowd the spring down."

"I'll show you about that some day," answered Uncle Joe. "It's easy enough when you know how."

Uncle Joe owed about fifty dollars on a span of horses he had bought in the spring. He had been cutting wood at odd spells during the summer, which was to be sold to the railroad running through the village. He could earn enough in this way to finish paying for his horses.

One day he was notified by the agent of the railroad company to haul the wood to town. When it was there he could have the money for it. Accordingly he set to work at once, and at the end of the week the wood was all piled up at the depot, and he came back from town with enough money in his pocket to make the last payment on his team.

"I don't care to carry it about with me," he said to his wife that evening. "I'll put it in this box. It'll be safe enough here, I guess, till I get a chance to send it to Brown." So Uncle Joe put the money in a box that stood on a little shelf in one corner of the living room, and supposed that no one but himself, his wife and Willie, knew anything about it. But, as he found out afterward, a tramp saw him put the money away. Tramps were numerous in that part of the country and were often discovered prowling about the house after dark, but he never once thought of such a thing as being seen by one when he put the money in the box. The next afternoon Uncle Joe came in from the cornfield and said that a bear had been at work in the corn.

"We'll set the trap to-night," he said. "I'll show you how it's done now, if you'll go and bring it in." Willie went to the shed, took the trap down from the nail upon which Uncle Joe had hung it after oiling it, and brought it into the kitchen.

"Bring one of the hand-spikes that's out by the wood-pile," said Uncle Joe, and Willie did so. Then his uncle put one end of the lever in a crack between the logs of which the house was built, close to the floor, and placed the stiff spring under it. By bearing down on the lever the spring was shut together, allowing the jaws of the trap to fall open. It was then an easy matter to fasten them open by turning a piece of iron over one of them and fitting the end of it in a notch at the side of the "pan." If anything touched this "pan," the pressure on it released the iron from the notch, and the great spring would fly up and fling the jaws together like a flash, and whatever happened to be between them when they closed, was sure to stay there until some one saw fit to liberate it.

"I see how it is done now," said Willie. "I wouldn't like to get my foot in there," he added, looking at the jaws of the trap, which had sharp teeth something like those of a saw, along each inner edge. Just then a knock was heard at the door, and Mrs. Sampson admitted a boy who was greatly excited. He had come for help. Their nearest neighbor had been severely injured by a falling tree. His wife was afraid he would die, and she wanted Uncle Joe and his wife to come at once. It was beginning to grow dusky when they went.

"I don't know when we'll be back," said Uncle Joe. "Not till late, any way, and probably not to-night. But you aren't afraid to stay alone, I suppose?"

"Of course not," answered Willie, and so he was left to take care of the house, while they went to help their neighbor in his need. He attended to the chores about the house and barn. When this was done it was quite dark. Then he ate his supper in the kitchen, and after that he took down his gun, which he had been using that day, and cleaned it carefully, thus using up an hour of the rather lonesome evening. He had just put the gun away when he heard the sound of steps on the path leading from the road. "Uncle Joe must be coming back," he thought. But he was mistaken here. The door opened, and a rather suspicious looking stranger came in.

"How d'ye do?" was his gruff salutation. "Keepin' house alone, ain't ye?"

"Yes, for a little while," answered Willie.

"I see the old man an' woman when they went away," said the visitor. "So I tho't I'd call 'round an' take a look into this 'ere box." When he said this he went to the shelf in the corner, took down the box in which Uncle Joe had put his fifty dollars, and drew out the money and put it into his pocket.

"Put that back!" cried Willie, in alarm. "It doesn't belong to you. That's what Uncle Joe is going to finish paying for his horses with."

"Do you s'pose he will?" said the tramp with a coarse laugh. "I don't."

"But you don't mean to—to take it?" Willie hardly dared to use the word that was the proper one, under the circumstances.

"I don't mean nothin' else," was the reply. "I see the money put into the box, an' I've been a watchin' my chance to get at it ever sence. D'ye s'pose I'd let such a chance slip to make a good haul? You must be green, if you do. But say, hain't you got nothin' to eat about the ranche? If y'have, dish up suthin', an' be lively about it."

"I'll see what I can find," said Willie, and went into the kitchen.

You may be sure the poor lad was in great trouble. Must he allow this man to take his uncle's hard-earned money? But how was he to prevent it? He happened to look at the trap, which remained on the floor where they had left it when the boy came after his uncle and aunt. A plan flashed into his mind. If he could catch the tramp in it! To think was to act. He had closed the door after him when he left the front room. The man on the other side of it could not see what he was doing. He placed the lever over the spring, as his uncle had done, pressed down on it with all his strength, and succeeded in fastening the jaws open. Then he placed the trap in front of the door opening into the kitchen.

The next thing he did was to take such articles of food as he found in the cupboard and put them on the table. When he had done this he placed the candle where its light would be thrown away from the door and the trap in front of it. A hasty inspection of his arrangement convinced him that the tramp, in coming into the kitchen, would not be able to see the trap that had been set for him. The kitchen floor was some inches lower than the threshold, and the man would be obliged to step down; therefore there was no danger of his discovering the trap by hitting his foot against it as he might have done had it been on a level with the threshold.

"If I fail to catch him, and he discovers what I have intended, there's no knowing what he'll do," thought Willie. "I must calculate for a possible failure. I'll get outside the kitchen-door before I call him. If he doesn't get into the trap I must run for it. In the darkness I can manage to keep out of his way."

He opened the kitchen-door, took up his position just outside it, and called out to the man that his supper was ready for him.

The door between the two rooms opened, the man saw the table with the food upon it, and then he stepped into the kitchen—and into the trap! the jaws of which closed on his foot with a vicious snap, as if they were glad to get hold of such game. The oaths and curses which broke from the man's lips when he realized that he was caught were fearful to hear, and yet they had a pleasant sound to Willie, for they assured him that the thief felt that he had been outwitted, and that he knew he could not escape. Willie's first act was to run around to the front door, through which he entered the living room and secured his gun. With this in his possession he felt himself master of the situation. The tramp started for the door with the trap fast to his foot. But the weight of it was so great that he could not make much headway, and the frightful grip of its jaws gave him so much pain that he sank down on the threshold just as Willie came back with his gun.

"Don't try to get away!" cried the brave lad. "You can't, if you try ever so hard. I've got a gun, you see, and I'll use it if you compel me to." He meant what he said and the tramp knew it.

"If you'll take this thing off I'll give you back the money," he said.

"I'm not quite green enough to do that," was the boy's answer.

"Then the money'll never do you or nobody else any good," cried the tramp, and taking it from his pocket he began to drag himself toward the candle, with the intention of burning it.

"Hold on there!" cried Willie. "Don't do that! If you do—"and he raised his gun threateningly, while his eyes flashed fire—"if you do I'll shoot you."

The tramp changed his mind at once. He saw that the boy was in earnest, and he was too sensible to do anything, under the circumstances, which would lead him to put his threat into execution.

"Throw me the money," ordered Willie. The tramp hesitated. The boy raised his gun.

"Take it, then," said the prisoner, with a great volley of oaths, and a moment later Willie had the satisfaction of putting the precious fifty dollars in his pocket.

"How long are you goin' to keep me here?" asked the man, sullenly.

"Till Uncle Joe comes back," answered Willie, promptly. Just as he said that he heard the gate open and someone came up the path.

"I wonder if it's another tramp?" thought Willie, in alarm. It was Uncle Joe.

"What's up?" he cried, as he discovered the lad on guard at the door.

"I set the trap and had the good luck to catch something in it," said Willie, drawing a great breath of relief. "Queer kind of game, isn't it, Uncle Joe?"

"Well, I should say so!" said Uncle Joe, in great astonishment, as he looked into the kitchen and saw Willie's "game."

"I was bound to save your money," said the boy. "Here it is. I wouldn't leave it in the box after this if I were you."

Uncle Joe took the advice, and the next day, when he carried the tramp to town and turned him over to the authorities, he sent the fifty dollars to the man he was owing, thankful that he had it to send. "I wouldn't have had it if it hadn't been for your pluck," he said to his nephew. "I tell you what it is, Willie, you did something a good many men wouldn't have dared do."

And Uncle Joe was right.

Galls and What Causes Them.

Last season there were sent me a number of leaves and twigs from different plants, each with a swelling of some kind upon it. These excrescences, whatever their form, were all produced in the same manner. An insect of some kind had perforated the growing plant and deposited an egg. The presence of this foreign body, the egg, caused a swelling to take place. The egg hatched, and the resulting grub, or maggot, was supplied with abundant food by the swelling. In time, the grub changed to a pupa, and at last the perfect insect came out, to continue to deposit more eggs, and to repeat the process. The swellings thus caused are known as galls; we are most familiar with these in what are known as "oak-apples," which are very common upon our oak trees. If you cut one of these oak-apples open, you will find the insect in some form within. The galls, or nut-galls of commerce, are of great importance in dyeing, making ink, etc. The swellings, due to the presence of an insect, caused a great amount of tannin, or tannic acid, to be accumulated at these points. The galls of commerce, or nut-galls, are produced by an oak common in Asia. When the gall insect pierces a bud of this tree it does not develop into a branch, but forms a hard, rounded body like that in figure 1; the projections upon which show the points of what might have been leaves, had they developed in the usual manner. Figure 2 shows some of the galls common upon oak leaves, and figure 3 shows galls upon a leaf of the linden. Several insects deposit their eggs in the young and tender shoots of the grape-vine, and produce curious galls. One of these is so much like a young apple as to have given rise to the report that a grape-vine had borne apples; others upon the grape are called tomato galls.

THE DOCTOR.

Fig. 1.—THE GALL OAK.

Fig. 2.—OAK LEAF GALLS.

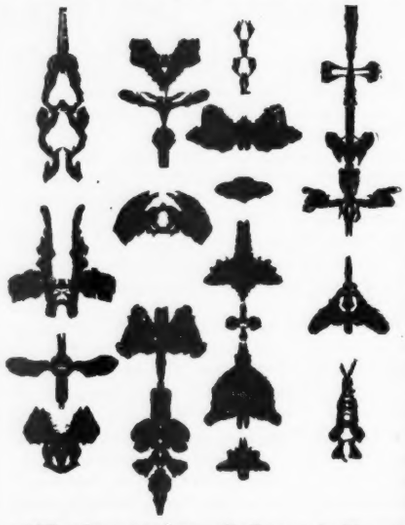
Fig. 3.—LINDEN LEAF GALLS.

Fish-Hawks in Council.

A party of summer visitors at Elberon, New Jersey, were one day very much surprised at the sagacity of a flock of fish-hawks. One of these birds being mistaken for a barn-yard robber was shot at while perching on the top branch of a tree. The ball struck the bird on his wing and he dropped, fluttering and screeching from bough to bough, until he contrived to clutch at a strong forked branch and rested there. All day long he sat, uttering piercing screams, and the next morning was found to have gathered round him a large circle of hawks, probably his friends and relatives, who seemed to be holding a council. Each in turn the birds chattered busily, as if giving advice or proposing plans of relief, while their wounded brother seemed to listen eagerly, and now and then put in a word. The approach of human beings produced the greatest consternation among the birds, but they did not fly away and desert the disabled one. The sportsman came again into the orchard, with the intention of putting an end to the poor creature's misery with another ball, but he was easily persuaded to wait and see what the birds would do. An immediate result of the meeting was the feeding of the prisoner, several members of the rescuing party flying to the ocean and returning with fish in their claws. It was easily seen, however, that the nearness of the tree to the house, and the lowness of the branch on which the wounded bird was crouched, caused the greatest anxiety, and even after the invalid's hunger was satisfied the other birds kept flying away singly and in parties, while others still perched on the trees and seemed to be awaiting the mesengers' return. It was so evident that some plan had been made that a number of ladies brought their needle-work into the orchard, and sat waiting to see what was going to be done. The hawks were very quiet all day, except that the sufferer uttered an occasional sound, as it moved uneasily in its leafy bed, while the watchers replied in low, soothing tones, as if with words of pity or encouragement. Towards sunset a single hawk appeared on the scene, then another, and another; a great chattering began, and the excitement increased as the messengers kept returning in twos and threes. The wounded bird raised itself as much as possible from the branch, and seemed joyfully expectant, while the others flew around it gaily. After a minute a loud flapping overhead was heard, a flock of hawks appeared, and in their midst a giant hawk—a bird much larger and stronger than any of the rest. For a few moments it perched upon the topmost branch of the tree, then started up and began circling about, coming lower and lower, nearer to its wounded brother, until suddenly swooping, it grasped the latter in its claws, and raising him gently from the bough, soared away with him triumphantly. The other hawks followed, leaving the spectators overwhelmed with astonishment. They did not doubt that the hawk was being carried to some safe, retired spot, where he could be fed and waited on until his wound healed. I. S.

Japanese Butterflies.

Pen, ink and paper are all the materials needed for making Japanese Butterflies. Write your name very heavily on the paper, fold the paper together in middle of name, and press it all around with your thumb nail. Open the paper, and you will find something very funny, we are sure. Make a few circles with crosses over them, an irregular blot, a snake line, and any other thing you can think of, these will produce something queer. You must use plenty very black ink to have the figures look well.



The Doctor's Correspondence.

A young neighbor, Harry T. W., has become greatly interested in reading the Bible, taking it up of his own accord, and finding it as attractive as any young folks' story book. The history of the Israelites in their wanderings has been full of interest to him, and he has come to me with many questions regarding these people and what befell them. Some of these, as is often the case with youngsters' questions, are very difficult to answer. One of these is:

WHAT IS MANNA?

He has read of the manna provided as food for the Israelites, and recollects that manna was given to him, when much younger, as a medicine, and he wished to know if these two were the same thing. My young friend had no idea of what a difficult question he asked me; the history of the manna of the drug stores is well known. On the other hand, "What is the manna of the Bible?" is a question that has been studied by many distinguished naturalists of the last century and this, without coming to a satisfactory conclusion. As we know all about the medicinal manna, let us dispose of that first. This is produced by a kind of ash-tree found in eastern countries, called the "Flowering Ash" (*Fraxinus Ornus*), often cultivated in Europe and sometimes in this country for an ornament. It is a small tree, rarely over thirty feet high, but very showy on account of its large clusters of greenish-white flowers.

HOW IS THE MANNA OBTAINED?

Sicily is the chief source of manna; in that country the trees are cultivated in plantations, and when about eight years old they begin to yield. Cuts, an inch and a half to two inches long, are made in the bark, cutting through to the wood. One cut is made daily beginning near the bottom of the trunk, with each succeeding cut about an inch above the former one. The thick, syrup-like juice exudes from the cuts and hardens on the bark into white spongy flakes, which when hard enough are removed and dried still further before they are packed for commerce. It consists mainly of a form of sugar called *mannite*, and has mild, laxative properties.

OTHER KINDS OF MANNA.

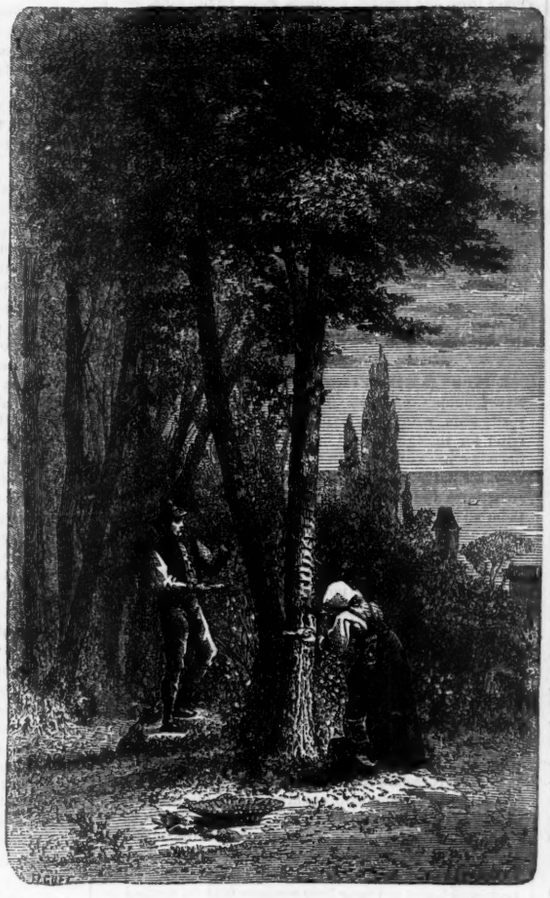
There are, in dry oriental countries, several other trees and shrubs also, which yield manna, usually when punctured by insects; but little is known of these kinds of manna outside of the localities that produce them. Even some of those plants, low in the order of vegetation—known as *lichens*, produce manna. These are like the plants often seen on old trees and on rocks, which are incorrectly called "mosses." Several of these, which grow very rapidly on the ground, are encrusted with a sort of sugar, or manna; these in time dry up, when they are carried by the winds to a great distance. These *lichens* occasionally occur at the present time in Western Asia and Northern Africa, and are eaten by the inhabitants and also by sheep and other animals. All the evidence points to these manna-producing lichens, as having been the original source of manna described by Moses.

COLORS OF FLAGS.—Several of our young readers wish to know the meaning of the various colors displayed on flags. The generally accepted meaning of flags of a single color is—white, as a token of peace; red, of defiance; black is the sign of piracy, or a black flag is hoisted as an indication that no quarter will be given or taken; a yellow flag denotes quarantine. The flags first used were of a single color only, but gradually, as new nations were forming, flags of two and more colors, and various devices were designed. The flag of the United States, which we call the "Stars and Stripes," was adopted by Congress, June 14, 1777.

Fair Suggestions.

Give the Boys and Girls a Chance.—Patching and Darning.

We would suggest to those who have in charge the preparation of the schedules or prize lists for the coming fairs, that they make special classes for boys and for girls. In these classes the ages above which none can compete should be specified, as it would not be fair to make a youngster of twelve compete with one of eighteen. The prizes should be offered for useful rather than ornamental things; for the girls, let bread take precedence of cake, and plain needle work, of embroidery.



GATHERING MANNA.

One of the most interesting exhibitions ever made was for the prizes offered by the *American Agriculturist* several years ago for the best specimens of patching and darning. Clothing of all kinds meets with rough usage on the farm, and nowhere is the ability to mend more in demand than in the farmer's household. We suggest to those who are preparing the schedules of prizes for the coming fairs, that they make a special class in the domestic departments, and offer prizes for the best specimens of patching and of darning, indicating the kinds. Thus—patched knees, torn overalls, etc., in men's clothing, and such repairs as are most needed on women's dresses. The darning and refooting of stockings should make a class by itself. The girls should not be obliged to compete with older persons, but have a class by themselves. Give patching and darning quite as liberal prizes as are awarded to fancy work of any kind.

Timely Topics.

JOSEPH HARRIS.

FERTILIZER FOR GRASS.—"What is the best commercial fertilizer for grass?" is a very innocent-looking question asked by a farmer in Ohio, who adds: "Bone has been our special for grass but the expense is large." I could easily tell how to raise a big crop of grass or hay, but when "expense" and profit is considered the question is, to say the least, not easy to answer. My first choice would be nothing; second, superphosphate; third, superphosphate and nitrate of soda, or the commercial fertilizer which furnishes the most soluble phosphoric acid and nitrogen for the least money. I could mention the names of a dozen manufacturers who are selling good commercial fertilizers at reasonable prices. Superphosphate is the basis of them all, and it does not matter what the superphosphate is made from. Its value, other things being equal, depends on the amount of soluble phosphoric acid it contains. I would just as soon have a pound of soluble phosphoric acid made from "rock phosphate" as from bones. Nitrate of soda and superphosphate will often give a great crop of grass or hay, but the nitrate costs more than the extra crop of hay is usually worth.

POSTAL RATES.—The postage on seeds and everything, except printed matter, in the United States is sixteen cents per pound. In Canada the postage on seeds is four cents per pound. In England a parcel weighing three pounds can be sent for twelve cents, and one weighing seven pounds for twenty-five cents. Here the limit of weight is four pounds.

A PAYING FARM.—A correspondent at Lodi, Wis., says his farm pays him from thirteen to seventeen per cent interest on all investments. Such a man has nothing to learn from me. He has twenty-three volumes of the *American Agriculturist*. Perhaps that has something to do with his success. "Its pages," he adds, "are read by the whole family—even the baby likes to look at the pictures."

CLOVER SEED FOR NEW ZEALAND.—A reader of the *American Agriculturist*, in New Zealand, wishes to get alsike and red clover and timothy seed from this country instead of from England. This would be a chance for some one in California. We grow large quantities of alsike and red clover here. Alsike is steadily gaining favor. The Deacon has sown it for the first time this spring. When the Deacon adopts a new thing you may be sure that it has some well-proved good qualities.

NITRATE OF SODA.—I continue to use nitrate largely for early crops, and for crops which command a relatively high price, such as asparagus, strawberries, early cauliflowers, early cabbages, early beets, early potatoes and onions. On these crops its use, in connection with superphosphate, is highly profitable. And, as a matter of fact, I use it on carrots, celery, parsnips and mangold-wurzels, but on these crops good stable manure is probably a cheaper source of fertility. For very early crops, however, the nitrate is invaluable. In my judgment, there is no truth in the idea that "superphosphate will injure rather than benefit corn in a dry season."

WHAT TO DO WITH BONES.—A farmer in Kansas wants to know "what to do with the old bones." He asks about dissolving them in sulphuric acid, or fermenting them with manure, or softening them with ashes. I do not believe any of these methods pay. Better sell the bones; or, if there is no demand, use them as a permanent fertilizer for grapevines or fruit trees, or asparagus or roses.

APPLES IN CANADA.—A correspondent of the *American Agriculturist* at Oshawa, Canada has 1,000 apple trees—Baldwins, Greenings, and a few Northern Spies. The Spies were planted twenty years ago and they only bear every other year, and then not more than two barrels per tree; but the apples are beauties. The Northern Spy is slow to bear; so slow that after being planted fifteen years my neighbors advised me to graft the trees with Baldwins or other productive kinds. They need well drained land and all the manure you can give them.

Chat with Our Subscribers.

Orchard Grass.—E. Hines, Clinton Co., Ill. Many experienced farmers prefer orchard grass to timothy, for its feeding qualities. It is much better to sow with clover, as it blossoms more nearly at the same time with the clover than does timothy.

The Gold Fish.—W. Haggar, Harrison Co., Texas, has seen it stated that a gold fish is a carp, and asks us if this is correct. Naturalists place the carp and goldfish as species of the same genus, *Cyprinus*, the carp being *Cyprinus carpio*, and the other, *C. auratus*. In England, the gold fish is frequently called the golden carp.

An Old Meadow.—F. Bolles, Owen Co., Ill., has an old meadow which he does not wish to plow up, and asks if it can be reseeded without plowing. By scratching the surface with a heavy harrow early in the spring, sowing an abundance of seeds and rolling, very good results often follow in favorable seasons. The meadow, with an annual dressing of some kind of fertilizer, should not "run out" in eight years.

The Polyporus Fungus.—We, a few months ago, illustrated some of the ornamental uses which this fungus may be made to serve. Bracket fungus is the only popular name we had heard for it, until Dr. J. G. Hollins, Anne Arundel Co., Md., wrote us, that in his locality "the fungus is known as 'skunks.' No woodman," he says, "will buy a tree with a 'skunk' upon it, as their presence always indicates internal decay of the tree."

Percheron Horse Show.—In connection with the coming State Fair of Illinois, which will be held September 6th to 11th, at Chicago, there will no doubt be one of the finest displays of horses ever given. The Percheron Horse Breeder's Association offer large prizes for recorded Percherons of both sexes and all ages, for grade Percherons by recorded sires, for business teams without pedigree but of Percheron blood, and for carriage and coupé horses of the same descent.

Cement for Glass.—A. Bowen, Lincoln Co., Washington Territory. A good glass cement for general use is made by dissolving one ounce of gum mastic in alcohol; soak one ounce of isinglass in water; add sufficient alcohol to dissolve it to a strong glue, and add one-quarter ounce of gum *ammoniacum*. Mix the two solutions, heat in a vessel of water, and stir. Keep in a stoppered vial, and liquify by setting the vial in warm water when wanted for use.

The Gigantic Water-Bug.—H. A Bemis, Barnes Co., Dak., sends us a specimen of a large, flat, olive-colored bug, about two inches long, which was found upon a roof. It is the Gigantic Water-bug, *Belostoma grandis*. Both the larva and perfect insect live in the water, but the latter often take long flights. It has a stout, sharp beak, with which it can inflict a painful wound. The small red objects "arranged along the sides of the insects" were, no doubt, eggs; when it reached us, they were minute red insects, the eggs having probably hatched in transit. The bug is destructive to young fishes.

Would Come to America.—A. P., a young Austrian farmer with ample means, wishes to settle in this country. He proposes to first travel for a year in seeing the various agricultural districts, and asks our opinion of his plan. He certainly could not do better, having first determined upon the kind of farming he would engage in, than to visit the localities where that is carried on, and it may be judicious to find work upon a farm for a season, in order to learn the details of work, which differ greatly from those to which he has been accustomed.

Kerosene Emulsion.—This is a most useful insecticide, and though we have already given the formula, we repeat it for the benefit of those who may not have the number in which it appeared: Take of kerosene (called paraffine oil in England and English Colonies), and half as much of milk, and thoroughly stir together until no oil is visible, and then dilute the mixture with twelve times as much water. Placing the oil and milk in a bottle and shaking, will, no doubt, be found a ready way of mixing the two. When applied by means of a syringe or spraying machine, this has been found an excellent insecticide, and not injurious to the plants.

Shade in the Pasture.—If there are no trees in the pasture which can afford the animals the needed shade, it is not necessary that they should suffer in the hot days of midsummer. Make a shade or shelter by setting up posts with a fork at the top; place poles across these forks, and lay a rough thatching of brush with the leaves on, placing some rails upon it to keep it in place. In this manner a sufficient shade may be easily provided, to the great comfort of the animals, and the profit of the owner. Whoever has had a cow in full flow suddenly drop off to a few pints on account of being overheated—sun-stroke, in fact—will provide shade in the pasture, or house his animals during the heat of the day.

Perforated Teat.—A. Little, Steuben Co., N. Y. It sometimes happens that small fissures or holes will come in the sides of the teat, that are very annoying to the milker, as the milk is forced out through these holes. Unless a cow with such a defect is very valuable, she had better be turned into beef. The remedy is quite a nice surgical operation. When the cow is dry, she must be securely tied and the hole in the teat cut above and below the old part of the hole, being thoroughly scarified. Then the lips of the wound must be sewed together, and they will in time cohere firmly. There is no assurance that the hole will not open again when the cow comes fresh and the full strain of milk comes upon the weak part of the teat.

Strawberry Blossoms Blighted.—W. T. Rambusch, Dodge Co., Wis., sends us specimens of flowers from his strawberries, in which the pistils—the beginning of the future fruit—turn black, and do not develop. He asks: "What is the disease, and what the remedy?" An examination with the microscope, shows that the stamens have their anthers dark-brown and quite empty. There being no pollen to fertilize the pistils they wither and blacken, and no fruit is produced. The trouble goes under the indefinite name of "Blight," the cause of which is not known. It may be caused by a cold storm at blossoming time, or it may be due to the lack of nutrition. If the latter is the cause, a liberal dressing of fine, old manure, or some good fertilizer may be of use; at any rate, we should try it before giving up the strawberry bed.

Flies Annoying Cows.—A. H. Almy, New London Co., Conn. This has been a subject of investigation with dairy experts, but no very satisfactory relief for the cow has yet been discovered. In Holland the cows are covered with a sheet while at pasture, but they are large and very gentle, the pastures small, and sometimes the cows tethered, with some person near them all the time; but in this country, with our semi-wild pastures and active cattle, sheets would not long remain on them. No ointment has been discovered that is of much use in repelling flies. Perhaps a liberal application of Persian insect powder would give some relief, even at pasture. In the stable the sheet should be used, Persian powder liberally spread about, and all the windows darkened. Cleanliness and darkness are the best fly repellents.

Cranberries.—The demand for this fruit is immense and constantly increasing. The centers of production are Cape Cod in Massachusetts, the low lands along the New Jersey coast, and a similar tract in Michigan; but there are thousands of acres in other sections where, with the same care, equal profits might be secured. If the demand depended entirely upon the home consumption we might well question its continuance, but there is an insatiable European market. Well barreled, it is transported in perfection, and that portion of the crop which will not bear long carriage may be canned in glass while still good to great profit. Minute directions are given for planting and culture in a little work, entitled "Cape Cod Cranberries," published by the O. Judd Co., so that an entire novice need not err in preparing the bog, selecting varieties, planting, and harvesting the crop.

Drying Fruits.—With the berry season the drying of fruits begins. Dried in the ordinary way with full exposure, the fruit is so soiled with dust and insects that it brings a low price in the market, and is unfit for use at home. Dried in the so-called "evaporators," the fruit is not only vastly superior in cleanliness but also in appearance. The light being always excluded, the fruit does not become discolored and brown. If one has a hot-bed frame and sash, he can arrange these to serve as a very useful drier. If he has a sash, he can easily make a frame to fit it. The frame should have a bottom and legs a foot high. Bore several inch or two-inch holes at the lower part of the front, and similar holes at the upper part of the back of the frame; these should be covered with wire cloth, or netting, to exclude insects. Arrange several shallow trays for holding the fruit. These may have the bottoms covered with slats placed half an inch apart, and the fruit laid upon a coarse fabric. Support these frames by cleats, or otherwise, so that the bottoms will be just above the holes in the front of the frames, in order that the air may enter and pass up through the fruit and pass out at the upper holes. Of course, the sash should slope towards the sun. This will keep out dust and insects, and the dried fruit, if not so handsome as the evaporated, is greatly superior to that dried in full exposure. Sweet corn may be dried in such a frame much better than in the ordinary way. Not a small saving in drying fruit, etc., under cover, is in the prevention of loss by birds.

Apple Trees in the North-west.—Andrew Nelson, of Salmon Bay, Washington Territory, sends us specimens cut from the bark of his apple trees, and rightly supposes that the trees are attacked by "bark lice." The insect in question is the Oyster-shell Bark-louse (*Mytilapsis pomicorticis*), and altogether is the worst case of it we ever saw. The shell-like scales not only so cover the bark that no portion of its surface is visible, but they appear to be piled up one upon another. If the orchard is young, and the trees are all attacked in the manner indicated by the specimens, the best and cheapest way will be to pull up the trees and burn them, and set out a new orchard on another place, taking care to closely examine the trees, to see that none are infested. Mr. Nelson states that he has tried potash, whale-oil soap, and kerosene upon his trees with no good results. He does not say how he applied kerosene, but that liquid in the form of an emulsion has (as described elsewhere) been found the most useful remedy for the Oyster-shell Bark-louse, though we doubt if anything will be of use upon trees so badly infested as those in question.

The "Champion" Wagon.—To subscribers who wish to know more about this new wagon, we have to say it is built upon a principle which has been thoroughly tested, and its value proved. The peculiarity of its construction is in its front axles and appendages. There is properly no front axletree. In its place are two upright axles (so to speak) fixed to the axle arms upon which the wheels are. Thus each wheel has an independent motion in turning, the bearing upon the ground keeping the same relative position to the load. The common wagon in turning, so narrows the bearing of the load in front that at the very time when stability is most important it is in most danger of oversetting. With this, the base or bearing of the four wheels, with reference to the load, is unchanged. The wheels are turned by means of levers, at right angles to the axle arms, connected with the pole in front. The bearing of the load upon the axle arms being close to the wheels, when an obstruction is encountered the wheel struck is not thrown back, causing the tongue to strike the horse on that side, but the tendency is for the wheel to rise at once over the obstacle, and there is no whipping of the pole from side to side as is usual on a rough road. These advantages would seem to be enough to warrant calling this the "Champion" wagon, but these are not all. The construction admits of putting springs under the front bolster—a very great advantage. Springs not only add to the comfort of the driver of a farm wagon, which is a small matter, but double the durability of all the parts, and make its draft much lighter work for the team. Besides, the Champion wagon will turn in very much less space than is required by ordinary wagons. Considering, in conclusion, the excellence of the wheels of the "Trumbull" pattern, and the thoroughness of construction, we do our readers a favor in directing their attention to this farm wagon.

Unicorn Apple-Leaf Caterpillars.—J. B. Suttler, St. Francis Co., Ark., sends us a reddish-brown caterpillar about an inch long, with a light-yellow head, and the second and third joints green, and a prominent horn just behind or on the fourth joint. At a casual glance this caterpillar might be taken for the common red-humped larva of the *Notodonta concinna*, a well-known pest of our forests and orchards, but upon a closer examination it will be found to differ in the green segments of the body, also as in the prominent horn on the back, as well as in the absence of the familiar red hump. It is, however, closely allied to the above-named species, and has received the rather awkward common name of the "Unicorn Prominent," but its scientific name is *Notodonta unicornis*. The late Dr. Fitch, in referring to this insect, says the caterpillars feed on the leaves of the plum, but in late years it has been found attacking various kinds of trees and shrubs. Consequently, we are not at all surprised to learn from our correspondent that it is doing considerable damage to the apple in Arkansas The Notodontas are day-flying moths of medium size, mostly with naked larvæ, or caterpillars, as seen in the silk worms, to which they are closely related. The moth of this Unicorn Prominent caterpillar is of a light-brown color, the front wings handsomely ornamented with irregular green patches. The cocoons are quite thin, resembling tough paper or parchment. The caterpillars may be shaken from the trees upon sheets and then gathered up and destroyed, or be poisoned by spraying the foliage with London purple or Paris green.

SEE PAGES 307, 308, and 309 FOR MATTERS OF INTEREST.

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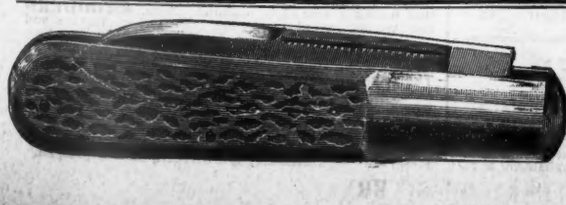

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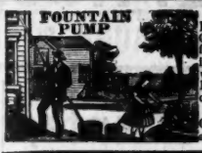

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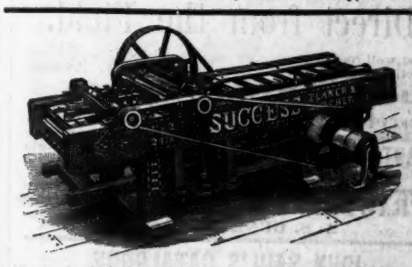

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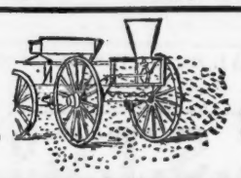
Price, $10.00.  Price, $10.00.

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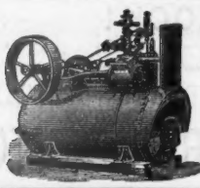

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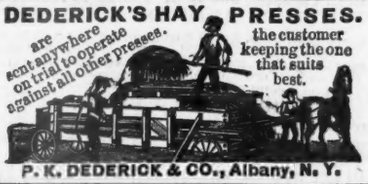

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Special inducements made to parties where we have no agent or dealer handling our Cutters. Send for New Price list and full particulars.
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The Pennsylvania Force-Feed Fertilizer Grain Drill.

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AUTOMATIC AND PLAIN SLIDE VALVE, Stationary, Portable and Traction. Cheapest and best for all purposes. Simple, strong and durable. No Farquhar boiler ever exploded. Saw Mills, Threshing Machines and Agricultural Implements and machinery generally. Send for illus'd Catalogue
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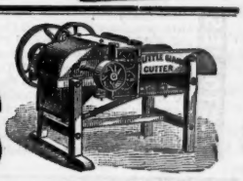

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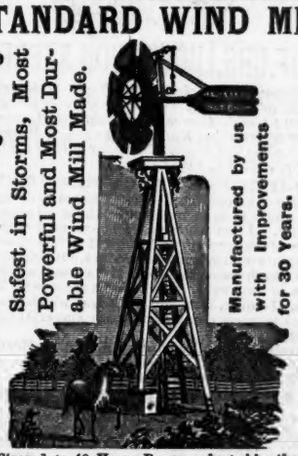

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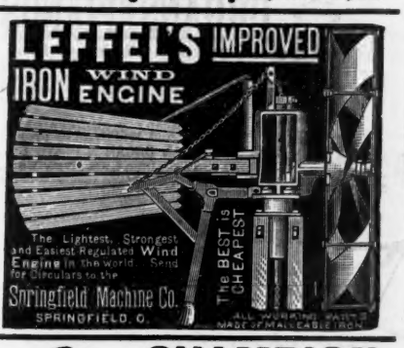
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Has the Largest Truck Wheels. DOUBLE GEARED. NO RODS. CHILLED BEARINGS, and LEVEL TREAD.

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With either regular incline or level tread track. Has the simplest and most efficient governor made. The Doylestown Junior Thresher and Cleaner has no superior. Illustrated Catalogue A sent free. Address sole manufacturer, DANIEL HULSHIZER, Doylestown, Bucks Co., Pa.

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Safety Steam Engines, best Railway and Lever Horse Powers, Threshing Machines, Straw-Preserving Threshers, Disc and Spring Tooth Harrows, Eagle Sulky Horse Rakes, Cultivators, Feed Mills, Feed Steamers, Grain Seeders, Corn Planters, Plows, Plow Sulkies, Hay Presses, &c., &c.
Established 1830. Send for Illustrated Catalogue.
WHEELER & MELICK CO. ALBANY, N. Y.

Bogus Butter and the Laws.

Several States have laws to protect the people from being imposed upon by being served, when they would buy butter, with a miserable compound made of fats, called oleomargarine and other names. Reports have recently come, of the trials and convictions of several of these sellers of imitation butter; one each in New York and Missouri, and two in Pennsylvania.

IMITATION BUTTER IN CONGRESS.

A bill to tax all imitations of butter under the internal revenue laws, passed the House of Representatives on June 3d. This bill received one hundred and fifty-three votes in its favor and one hundred and twenty-two in the negative.

WHAT IS BUTTER.—WHAT IT IS NOT.

The bill defines butter to be: "A food product made exclusively from milk or cream, or both, with or without common salt, and with or without additional coloring matter." Oleomargarine is defined as: "All substances made of oleomargarine, oleo, oleomargarine oil, butterine, lardine, suine, and neutral; all lard extracts, and all mixtures and compounds of tallow, beef fat, suet, lard oil, vegetable oil, annotto, and other coloring matters, intestinal fat and offal fat, made in imitation or semblance of butter, or when so made, calculated or intended to be sold as butter or for butter."

Special taxes are imposed: On manufacturers, $600; on wholesale dealers, $480; on retail dealers, $48. Penalties are imposed on any one who shall deal in oleomargarine without paying these special taxes. Provision is made in the bill for the proper stamping and labeling of every package of oleomargarine. Besides the above taxes, a tax of five cents a pound is imposed upon all oleomargarine manufactured and sold, and a penalty is prescribed for the purchase or reception for sale of oleomargarine not branded or stamped according to law.

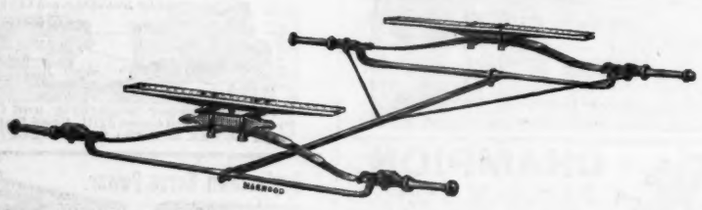
WILL THE BILL BECOME A LAW?

The friends of the bill are somewhat doubtful as to its fate in the Senate. It is said that the largest and most active "lobby" of the session is working against the bill. The manufacture of imitation butter is much too profitable for capitalists who have engaged in it to give it up without a struggle.

Fairs.—When they are held.—Will all the secretaries and other officers please, immediately, notify us of the time and places when their respective fairs are to be held in all Districts, Counties, States, Territories and Provinces in America this year?

Personal.—Johnston B. Cornish, the head of the firm of Cornish & Co., Manufacturers of Organs at Washington, N. J., is the youngest man ever elected to the office of mayor in the State of New Jersey.

The Story of a Snowball.—Under this caption our cotemporaries are publishing a very entertaining sketch of the origin and development of the advertising agency of Edwin Alden & Bros., who, owing to their increase of business, have removed the home office in Cincinnati, from Fifth street to Fourth street, where three entire floors have been specially re-arranged for their rapidly growing business.



The Handy Gear.—Elsewhere appears an advertisement of the Handy Wagon, manufactured by Bradley & Co., Syracuse, N. Y., for which "simplicity, lightness, convenience and low price" are claimed. Inasmuch as many manufacturers of wagons desire to finish them themselves, Messrs. Bradley & Co. have arranged to supply simply the gears, of which we present an illustration above. At present these gears are of one size, viz.: One and one-eighth inch axle, suitable for a body six feet long. Other weights and sizes are, however, they inform us, to be made as the trade may demand. They have copyrighted the word "Handy," as applied to vehicles, and they claim that made with this gear "wagons are handy to get into and out, handy to load up and unload, handy for single-horse or pair."

Seeding to Grass with Millet.—Don't do it. S. G. Winant, Staten Island, N. Y., has a highly manured piece of ground now in fodder corn, which he means to cut early, and asks if it will do to seed to grass with millet. It is very doubtful if he could get "a catch." The grass would be smothered by the leafy crop. Besides, if the expectation is to cure the corn for dry fodder, and it is cut early for this purpose, it will be sure to mould, and will not cure well. If cut to feed green, as soon as a good patch is cut off it may be prepared for seed, and grass seed lightly harrowed in by itself. If the corn is to be dried, it will be best to wait until near the middle of September, when we have cool nights, then cut, and cure the fodder off of the ground, which should be seeded down as soon as possible.

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MINARD HARDER, Cobleskill, Schoharie Co., N. Y.

PROF. CHS. LUDWIG VON SEEGER,

Professor of Medicine at the Royal University; Knight of the Royal Austrian Order of the Iron Crown; Knight Commander of the Royal Spanish Order of Isabella; Knight of the Royal Prussian Order of the Red Eagle; Chevalier of the Legion of Honor, &c., &c., says:

"LIEBIG CO'S COCA BEEF TONIC should not be confounded with the horde of trashy cure alls. It is in no sense of the word a patent remedy. I am thoroughly conversant with its mode of preparation and know it to be not only a legitimate pharmaceutical product, but also worthy of the high commendations it has received in all parts of the world. It contains essence of Beef, Coca, Quinine, Iron and Calisaya, which are dissolved in pure genuine Spanish Imperial Crown Sherry."

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Price of 2-in. Mesh, No. 19 Wire, width, 3 ft., 4 ft., 5 ft., 6 ft., per roll, $3.95, $5.26, $6.56, $7.90. Lawn and Farm Fencing, Hatchers, Brooders, Portable Poultry Houses. Everything for the Poultry Yard and Kennel. Illustrated Catalogue for 1886, sent on receipt of 10 cts. Price Lists free. Address

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The only school in the STATE which has the right to grant the degree of Doctor of Veterinary Surgery (D.V.S.)

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The regular course of Lectures will commence in October, 1886. Circular and information can be had on application to Dr. A. LIAUTARD, V.S., Dean of the Faculty.

REGISTERED *Guernsey & Jersey Cattle;* also thorough-bred and grade *Guernseys* and *Jerseys*, Lincoln, Southdown, & Hampshiredown Sheep *a specialty, Chester White, Berkshire, Yorkshire & Poland-China Pigs*, Scotch Collie Shepherd Dogs & a variety of Poultry. Come see our stock & select for yourselves. Send Stamp for circular and prices. EDWARD WALTER, P. O. Box 76, West Chester, Pa., (formerly T. Walter & Sons.)

JERSEY RED, YORKSHIRE, BERKSHIRE, POLAND-CHINA and CHESTER WHITE PIGS of choicest breeding and fine individual merit. Cotswold, Southdown, and Oxford Down Sheep and Lambs. Scotch Colley Shepherd Dogs, and Fancy Poultry. Illustrated Catalogue and prices on application.

W. ATLEE BURPEE & CO., Philadelphia, Pa.

DOGS Fine Bred Dogs, Fowls, Fancy Pigeons, and other Pet Stock. Circular Free. E. MAURER, 464 N. 9th St., Phila., Pa.

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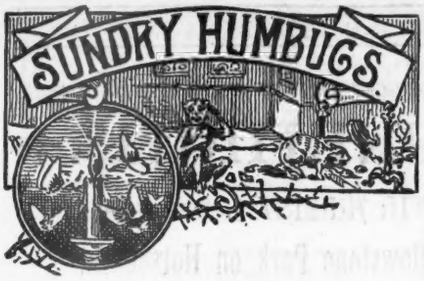


"Judicious Speculation."—Puts, Calls, Spreads and Straddles.

Mr. Charles C. Hale, of Penobscott County, Maine, and other subscribers of the *American Agriculturist* are receiving pamphlets, together with circular letters, from a "Broadway Banker and Broker," wherein "judicious speculations" in stocks, grain and oil are set forth in a very alluring style. The *modus operandi* of making five hundred and one thousand dollars on each one hundred dollars invested is deliniated in extenso. "Puts," "Calls," "Spreads" and "Straddles," and other stock privileges are described, and all the temptations of Wall street speculations are held in the most seductive manner before the eyes of the uninitiated. Mr. "Will you walk into my parlor said the spider to the fly" is kind enough to tell his readers in his circulars, that they must incur risk of course, and he is particularly kind enough to add, "that all who speculate in stocks should do so according to their means." We have only one word of advice to our subscribers—steer clear of the author of these circulars, and steer clear of Wall street speculations generally. You are almost certain to lose every dollar you invest in Puts, Calls, Spreads or Straddles, or in any other kind of Wall street speculations. There the big fish swallow the little, and a fool and his money are soon parted.

"Some Trap Set for You."

Mr. Wm. Walker, of Whitley County, Indiana, has received a circular letter signed J. B. Slosson, No. — Bowery, New York City, wherein the writer proposes to take Mr. Walker into his confidence, and to share the profits with him in a money-making scheme which he will fully describe in a second letter. This is the way Mr. J. B. Slosson of the N. Y. Bowery begins his letter to Mr. Wm. Walker, one of our readers living in Indiana.

"No doubt when you receive this letter you will say it is some trap set for you to get you into trouble; but such is not the case, I promise you this, as true as there is a God in heaven. I obtained your name through a friend of mine who passed through your place, and this is all I know of you; and, on my solemn oath, I speak the plain, candid truth; and I swear before the Almighty God in Heaven, my purpose is far from harming you, either in word, look or action; and should you make up your mind to answer this letter, I will give you my word and honor, that no person, man, woman or child, shall ever hear from my mouth the least thing that ever passes between us, and I will keep this promise as sacred as I would my oath before God in heaven."

On receipt of this remarkable communication, Mr. Walker immediately forwarded it to the Humbug column, as all our other subscribers should do in similar cases. We have simply to say that any man who addresses a stranger in the manner indicated, can not only be put down as a fraud, but a blasphemous scoundrel. We are not acquainted with Mr. J. B. Slosson, but we have no hesitation in applying both these epithets to that individual, whoever he may be.

How Can He Let Go?

Mr. W. C. Coombs, Clermont Co., Ohio, seeing an advertisement of a New York monthly which offered each subscriber as a premium a household article, which his wife happened to want, subscribed for the periodical, which came in due time, as did the premium. Mr. Coombs does not complain of the premium—which was worth what it cost—but of the magazine, which contains advertisements "not fit to be seen in the family." Several of these advertisements are sent us; many of these are so vile that we cannot reproduce them here. The question with our correspondent is, "How shall I let go, and get them to stop sending it to me?" No sooner had the name and address of Mr. Coombs been received by the publishers of the magazine, than a swarm of advertising circulars of lotteries, indecent publications, etc., began to come, all addressed precisely alike, most of which were promptly committed to the flames. The whole thing shows that there is a gang of unprincipled fellows in New York and Chicago who are helping one another to run their schemes. It smells decidedly "rotten." The experience of Mr. Coombs illustrates a well-known fact, that names are an article of trade. It would not be very surprising if this very cheap monthly with its one premium should turn out to be a scheme for procuring names. The amount received for subscriptions would cover the cost of these, and the names and addresses copied, could be sold to many managers of doubtful enterprises.

"Everyone his own Silver Plater."

There are often seen in the streets of cities—and in fine weather they go from house to house in the country—venders of a "Silver Plating Fluid." This fluid is warranted to restore plated articles of all kinds, worn door-knobs and bell-pulls, the metal-work upon the harness of the family horse—besides these, the forks, spoons and other tableware that has become worn in use. To show the efficacy of this "Plating Fluid" the vender takes a copper cent and rubs it briskly with the stuff, and the bare coin is apparently converted into a silver piece. The victim buys, at twenty-five or fifty cents, a small vial of the liquid—dear enough at any price. The purchaser begins to renovate his worn plate. He uses the liquid to give a beautiful polish to the door-knob and bell-pull towards night, and in the evening touches up the spoons, forks and other tableplate, thinking what a cheap way it is of replating. In the morning he goes down to look at his door-knob and bell-pull, and finds them, instead of silvery brightness, intensely black, and the spoons and forks in a similar condition.

WHAT IS THIS "PLATING FLUID?"

The stuff, which the vender claims will plate, has no silver about it, but is really a solution of nitrate of mercury. To make it, mercury (quicksilver) is dissolved in strong nitric acid (*Aqua fortis*), and, when the action has subsided, an equal bulk of water is added as well as some prepared chalk. When this so-called plating fluid is rubbed upon copper, brass, or any of the alloys of which plated ware is made, the nitric acid attacks the base metal and leaves the mercury (quicksilver) as a mere film upon the surface, which, on rubbing, becomes very bright, but in a few hours the article plated is blacker than at first. Avoid all such plating fluids, as they are disappointing and may be dangerous.

Instructions in Telegraphy.

Not very long ago we exposed a chap in a Western State who professed to give instructions in telegraphing and secure positions for his pupils. The scholars, of both sexes, were required to pay ten to fifteen dollars in advance, and before the term was half finished, the teacher left to renew the swindle in some distant place. Now the report comes from Boston that a similar scheme has been operated in that city. "The American Telegraphic Company," No. 90 Washington street, promised situations in which from $45 to $125 per month could be earned. A large number who had paid from ten to forty-five dollars in advance, finding that there was no prospect of getting the promised situations, but were kept in suspense and expense for weeks, combined and caused the head of the concern, one Hellehan, to be arrested for obtaining money under false pretences. Our readers should regard with suspicion any advertisement which requires money in advance.

Common Sense Law.

Henry Wilbur, Hillsdale Co., Mich., writes us that by the decisions of the Michigan courts, no paper not intended to be a note can be converted into a proper note by any alteration, erasure, or writing in above the signature. He sums up the various decisions as follows:

"DON'T PAY IT."

"If you have been deceived into signing a paper purporting to be a note, which was not intended to be a note at the time given, but has been made to read like a note by fraudulent parties writing over it, or by cutting or tearing off a portion to make it read differently from the maker's intention, don't pay it. Such notes cannot be collected by law if the defense properly shows the felonious alteration in the reading or meaning of the instrument, although said paper may have passed (before due) into an innocent purchaser's hands. The buyers must suffer—not the signer of what was originally of a different character. To erase or add to an article conveying different powers from the original is not only a felony but renders the paper worthless. The buyer must know what he is buying as well as the signer to know what he is signing. The law protects best those who try to protect themselves. A signature to a receipt or article of agency cannot be made a collectable note (at law) by forgery or by writing a note over it, or by changing it to something else by tearing away part of the paper. A party, however, may be deceived as to what he is signing. A paper folded so as to show no reading matter when signed, but when opened proves to be a note of hand, is more questionable as to signer's liability, but it is law (I believe) that fraud vitiates all contracts. It is also reasonable to suppose that a man must use due care about what he signs, and for this reason the law may hold that an innocent purchaser should not suffer by the carelessness of the party who failed to discover what was underneath his signature; but parties cannot make notes over other parties' signatures without their knowledge or consent, and compel payment by law."

"Let the Cobbler Stick to his Last."

The proverb, *Ne sutor ultra crepidam*, of which the above is a free rendering, has come to us from a very early time. It is another way of saying, "Mind your own business," and the caution is as much needed now as at any former time. Many of the swindles practised upon farmers could not succeed were not the victims tempted to leave their own business in the hope of making more by some outside operation.

HOW A FARMER WAS ROBBED.

A well-to-do farmer, a Mr. Hyatt, of Steuben Co., N. Y., was called upon by two well dressed men, who drove up in a stylish turn-out. They represented that they were dealers in phosphates, of which they had made sales in the neighborhood and had taken notes in payment, which, as they were about to leave that vicinity, they would like to turn into cash. The notes amounted to $3,500, which they would sell to Mr. Hyatt for $3,000. As the notes were given by farmers known to be responsible, and had but a short time to run, Mr. H. concluded to buy them. He would be obliged to go to Pen Yan and draw the money from the bank, and it was arranged that one of the well-dressed men should drive him to the bank, while the other remained in the neighborhood with a view to making more sales. The money had been drawn from the bank, and the two were on their return to Mr. Hyatt's house, when they were met part way on the road by the well-dressed companion who had remained behind to sell more phosphates. Both fellows presented revolvers, made Mr. Hyatt give up his $3,000 and go home on foot, warning him, if he made any alarm, that they would kill him. The rascals drove to the nearest railroad station and made their escape. Mr. Hyatt, in not sticking to his last, turned note shaver and, instead of making $500, lost $3,000.

Lightning-Rods; An Old Story Retold.

Where there is a sparse settlement and a small farm-house, the lightning-rod man will sooner or later find that farm-house. We have only to repeat our warning—repeatedly uttered—beware of him; beware how you deal with him; beware how you sign any paper he may present to you; beware how you may in any way commit yourself to him. Better construct your own lightning-rod, and for full instructions how to do this turn back to your August number of the *American Agriculturist*, 1883, page 357. The advice we then gave to people for constructing their own lightning-rods was given in answer to many inquiries made of us, and holds good every year.

Every lightning-rod has two ends. In building your own lightning-rod bear this in mind, to wit: One end of the rod is in sight of the building, the other is out of sight, but where? Upon the answer to this question—"where?"—depends the safety of the building. It is upon this end of the rod that is underground and out of sight that the safety of the building depends. Observe this. If the lower end of a rod upon a house or a barn is stuck for a few feet into the earth, where it may be dry or moist, but probably dry, that rod is useless. On the other hand, if the lower end of the rod can be carried to the water in a well; or, if by the water conductor or otherwise, the lightning-rod system may be made to connect with the water cistern, all will be safe.

Another Note Dodge.

Those swindlers who go about among farmers, purchasing poultry and other produce, are often very business-like. They would have a receipt for every dollar they expend. One of these has written out a receipt for the amount of a purchase, "in pencil—a mere memorandum, you know," and as he gets to the end away goes the point of the pencil. "Never mind; here is one of those fountain pens, always ready," and it is given the seller to sign his receipt with. The scamp departs with a signature in ink to a memorandum in pencil. In due time the pencil is rubbed out, and the signature appears at the bottom of a note. Don't pay it. The courts are bound to defend honest men. But, farmers—be careful what you sign.

The American Agriculturist, from May until December, for 75 Cents.

We will furnish the *American Agriculturist*, from May to December, that is, for eight months, for seventy-five cents. Under this offer the new subscribers will receive the elegant Engravings of the Home of Jefferson, which went out with the May number, and also, any other of the series of the "Homes of our Farmer Presidents," which may appear between now and December. Of course, subscribers under this offer, do not receive any other premiums beyond the pictures of the homes of our Farmer Presidents. We are receiving daily, large numbers of testimonials from subscribers who have received the first of this series, that is, the home of Jefferson, Monticello. With hardly an exception, they assert that the Engraving far surpasses their most sanguine expectations.

The Prize Stories.

So many valuable and interesting stories have been written, in response to our offer for cash prizes, that the judges have not as yet been able to give a complete report and award the prizes. They will, however, be announced in the forthcoming number of the *American Agriculturist*.

Profitable Reading.

Though the business prostration continues generally through the country, owing to strikes and other causes, our Advertising for this month of July exceeds by more than a page that for the corresponding month of last year. These advertisements afford profitable as well as interesting reading to our subscribers. They should look through these pages not only for what they may desire, but they may discover various aids and hints which have not before been brought to their attention. In writing to an Advertiser state that you saw his Advertisement in this periodical.

Jefferson's Home.

Those of our subscribers who have not already done so, should hasten to send us ten cents to cover cost of mailing for the home of Jefferson, printed on extra heavy paper, specially adapted for framing, and securely packed and forwarded in a heavy tube specially made for the purpose. The second series of engravings is now in preparation.

Percheron Horses.

The growing favor of these noble animals, especially in the Western States and Territories, is noteworthy. Mr. M. W. Dunham, of Wayne, Ills., who has imported more of this breed, and who knows more about them probably than any other American, is to write a series of articles for the *American Agriculturist* on the Percheron breed. They will prove of no little value and interest.

Extended Thirty Days.

The time during which the valuable articles offered in the Premium List can be secured, is extended until August 1st.

Peter Henderson's Writings.—Peter Henderson writes with his accustomed vigor. The article on page 278 is from the Advance sheets of a new work which he now has in preparation.

SPECIAL PREMIUMS

FROM NOW UNTIL AUGUST 1.

Gen. Wingate's Through the Yellowstone Park on Horseback,

described on page 311, is one of the handsomest books the Publishers of the *American Agriculturist* have ever issued. It is bound in gold, extra cloth, and contains some most elegant illustrations. Furthermore, General Wingate is one of the most entertaining writers in the country. His volume has received the highest praises from every quarter. Many purchasing the volume have told us, that they were almost sorry they carried it into their homes, because it made them all so uneasy to go and see the Yellowstone country. The price of the volume, post-paid, is $1.50. To any person who will send us two subscribers to the *American Agriculturist*, at $1.50 a year, before August 1st, we will send this volume post-paid.

Profits in Poultry.

This new volume of 256 pages and 100 illustrations is the most thorough, complete and cheapest work on poultry raising ever issued. It is edited by such well-known writers as T. M. Ferris, Mason C. Weld, and P. H. Jacobs. The volume is beautifully bound, and the newspapers and individuals all unite in pronouncing it far superior to any other work of the kind issued in this or any other country. To any person who, before the 1st of August, will send us a new subscriber to the *American Agriculturist* with $1.50, beginning with any month, we will send this volume free. This is a great offer, and is continued only until the 1st of August, as stated.

The Percheron Horse.

There are now more than five thousand Percheron horses in this country. Our new volume, which is described on page 311, covers the whole subject of Percherons in America and in France. The price of this volume is $1.00. To any person, who will send us a new subscriber to the *American Agriculturist* with $1.50, before August 1st, we will send this volume, post-paid.

Bridle Bits.

This elegant work on practical horsemanship, by Col. Battersby, just published by us in a very attractive style, elegantly illustrated, is sold for $1.00, and is more fully described on page 311. We will forward this work to any person, who sends us a new subscriber to the *American Agriculturist*, with $1.50, before August 1st.

A Great Number of a Great Periodical.

It is the unanimous verdict of our subscribers and cotemporaries that the numbers of the *American Agriculturist* being issued this year far surpass any previous issues of this periodical. According to our own ideas, that for May surpassed all others. Our readers, however, will, we are confident, after its perusal agree with the publishers that this July issue fully equals the May number.

A Great Array of Contributors.

Our regular staff of editors is larger than that on many leading daily papers of the United States. It will be seen from the list below, however, that the contributors to this number cover the entire country.

Contributors to this July Number:

A. B. Allen, Founder of the *American Agriculturist.*	David W. Judd, N. Y.
Dr. George Thurber, N. J.	Peter Henderson, N. J.
Dr. F. M. Hexamer, N. Y.	Gen. Geo. W. Wingate, N. Y.
Joseph Harris, N. Y.	R. G. Newton, Dakota.
A. S. Fuller, N. J.	John Gould, Ohio.
Henry Stewart, N. C.	Capt. Wm. Pinto, N. Y.
Seth Green, N. Y.	J. S. Price, Cal.
M. C. Weld, N. J.	D. D. T. Moore, N. Y.
John M. Stahl, Ill.	Ph. S. Dilworth, Pa.
E. E. Rexford, Wis.	Dr. H. Endemann, N. Y.
P. H. Jacobs, N. J.	M. H. Moore, Kansas.
Oscar R. Gleason, Mass.	W. W. Wade, Pa.
Geo. J. Kramer, N. J.	W. E. Partridge, N. J.
P. H. Goodloe, Miss.	H. N. Jarchow, N. Y.
Arthur L. Valk, N. Y.	Mrs. E. H. Leland, Wis.
Stephen Powers, Fla.	Mrs. E. S. Welsh, N. Y.
Col. L. S. Hardin, N. Y.	Mrs. F. M. Hexamer, N. Y.
Geo. P. Smith, N. Y.	Miss Agnes C. Sage, N. Y.
	Miss I. Smithson, N. Y.

Our Elegant Illustrations.

The cover design for this July number, which we change every month to suit the season, represents the male and female woodcock, whose shooting is now permitted in July by the laws of many of the States. The engraving of the Yellowstone Falls on page 279, engraved for us by a veteran artist, N. Orr, is equal to any work ever appearing in an American periodical. Bennett's first page harvest picture will please the eye of every reader. The same artist shows us on page 281 how Gleason, the famous horse trainer handles his animals. Keeler presents on page 277 some very attractive illustrations of non-sitting fowls. Mr. Valk, the architect, presents on page 283 designs of a handsome country house. On page 285 our artist gives us an original picture of the "bob-tail sheep dog." On page 285, our engravers present a group of Negretti Merino sheep. Then the designs and illustrations of farm animals, farm contrivances, fruits, flowers, labor-saving devices, the pictures in the household and children's departments—all go to make up a wealth and variety of illustrations, which will both instruct and entertain our readers.

Valuable Advertisements.

The advertisements, which, by the way, notwithstanding the dull times, exceed those of July last year by over a page, constitute an interesting feature of this number. We aim to edit our advertising columns as carefully as our reading columns, that nothing may be placed before our subscribers which we cannot fully recommend. A subscriber living in Philadelphia, who is not interested in farm matters, but regularly for many years has subscribed to this periodical simply for its advertisements, doubtless experiences the pleasure which very many others enjoy with him. He says he enjoys the advertising columns of the *American Agriculturist*, not only for the valuable information they give him, but because it is a real treat to see one periodical in this country which does not admit quack medicines, and every number of which is thoroughly clean and pure from cover to cover.

OUR GREAT AUGUST PREMIUM.

PHOTOGRAPHY AT HOME.

Amusement, Instruction, Profit.

NEW CAMERA.

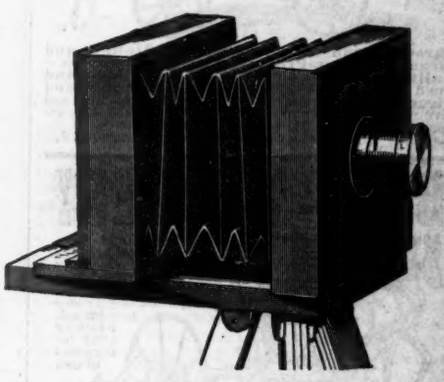
The IMPROVED EXPERT.

A $15 OUTFIT FOR $10.

4 x 5 PLATES.

Taking Cabinet Sized Photographs.

Or for 13 Subscribers to the American Agriculturist, at $1,50 each, received before August 1.



In offering the **Improved Expert Camera and Outfit** to the subscribers of the *American Agriculturist*, it is believed more is given for the money than has ever before been attempted in this line. Not only a first-class Camera, with lens, tripod, plate-holder, and focusing-screen are given, at as low a price as the cheapest styles have ever been sold, but there is given with every Camera a **complete outfit,** comprising everything necessary for the entire process of taking and finishing a picture.

Nearly all beginners are misled by advertisements offering "Camera Outfits" for ten, twelve, or fifteen dollars, as the case may be, only to find after purchasing one that they must make a **further investment of from five to ten dollars** before they can make the first attempt at photography. The **"Improved Expert"** outfit consists of a **thoroughly well-made** 4x5 plate **Camera,** suitable for all kinds of work, with **lens, focusing-screen** and **tripod,** one **double-reversible plate-holder,** one package of **best instantaneous dry plates,** one package **sensitized paper, developing outfit** with all chemicals necessary for developing and fixing the plates, **toning solutions** for finishing the pictures, and **trays** for the different solutions, with complete directions—packed in a strong **carrying-case.**

The IMPROVED EXPERT CAMERA, as shown by the cut above, is finely made and finished, of polished *butternut wood* of the latest model, with the *movable front board*, brass trimmings, and the new *swing lever* for holding the back in focus, instead of the usual thumbscrew. The **patent reversible double plate-holder,** supplied only with these cameras, is so constructed as to bring the *length* of the plate *up* and *down* when so desired, for taking an elevated view, without altering the position of the camera on the tripod, answering all purposes of a *reversible back.* The **lenses** are very carefully ground and will give a sharp picture the full size of plate. The **detachable tripod** is very *strong* and *rigid*, and the *lightest* ever produced. The **ready-mixed developer** is one of the greatest boons ever offered to beginners, saving as it does all trouble of weighing out and dissolving the different chemicals. It is made from the best-known formula, and is recommended as being the easiest for the amateur to handle, and gives the best results. **WE WARRANT EVERY OUTFIT,** and will send one to any address, **complete,** with **everything described above,** on receipt of **TEN DOLLARS,** or for **THIRTEEN SUBSCRIBERS TO THE AMERICAN AGRICULTURIST, at $1.50 each, received before August 1st.**

The uses of a camera are beyond number, there being many things about every home that one could not, or would not, think of taking to a regular photographer—the house, the family group, the horse, the dog, a favorite cow, or any other animal. A moment's reflection will enlarge the lists to dozens of pictures that one can produce with his own outfit which he would never have if obliged to go to a professional photographer for them. **When going upon a visit,** or even a short trip from the farm or your home, a camera is an invaluable companion. Everything that is interesting can be photographed, and the plates kept until it is convenient to develop them, thus preserving mementos that otherwise would be impossible to obtain.

As a matter of Profit. We do not suppose that every one who buys a camera will want to turn it to making money, but we believe that any enterprising young gentleman or lady reader of the *American Agriculturist* can easily earn many times the price of an outfit in his or her own town. Hundreds of people would pay a good price for a photograph of their house and land, which costs but a trifle to produce, and we know of many amateurs who have started in a small way and become deeply interested in the art, and are now successful professional artists.

The Science of Photography has made greater strides toward perfection in the past few years than during any period since the invention of the Daguerreotype, which was the beginning of *practical photography*, and it is to the invention of the **prepared gelatine dry plate** that much of the improvement is due. The employment of dry plates dispenses with three-quarters of the work *necessary* with the old or *wet* process, and enables the amateur to do *at once* what required months, if not years, of study and apprenticeship to attain under the old system. Not only is the dry plate handier, quicker, and more cleanly than the wet process, but the **results are far superior** in every way, dry plates being now used by the leading photographers for the finest work. The manner of operating the Camera and producing the picture by the new process is so simple that even a child can understand and follow it with good success, and it may be briefly described as follows: Set up the camera on the tripod, with the glass focusing-screen in position, the lens pointed at the view or object to be taken. Throw a cloth over the head and the picture will be seen on the glass screen, the camera back being pulled out until in *focus*—that is, at the point where the view is seen the clearest and sharpest. The focusing-screen is then removed and the plate-holder (in which the plate has been inserted in the dark room) is set in its place. Everything now being ready, the slide is pulled out of the plate-holder, and the cap removed from the lens for a few seconds, causing the plate to receive the impression of the view at which the camera is pointed. Having thus exposed the plate, it is ready to *develop*, which is done by the application of the chemicals in a dark-room, taking but a few minutes to accomplish, and after drying, the plate has become a *finished negative*, from which any number of pictures may be printed and finished. To print the pictures, all that is required is to place the negative on a sheet of *sensitized paper* in the sunlight, the rays of the sun causing to appear on the paper the exact reproduction of that which was seen on the focusing-screen preparatory to exposing the plate. Any number of plates can be thus exposed, and kept for months, if so desired, before developing. Send now, immediately.

MISCELLANEOUS ADVERTISING.

THE PEERLESS

Thresher and Cleaner—Clover Huller and Cleaner—Straw-Preserving Rye Threshers—Railway and Lever Powers—The Howland Feed Mill—The Aspinwall Potato Planter, and Digger. Our machines are guaranteed to work well, and have received the highest testimonials and cannot be excelled.

B. GILL & SON,
Trenton Agricultural Works, Trenton, N. J.

BULLARD'S HAY-TEDDER!

Does better and more work, draws easier, costs less for repairs, is better made, lasts longer, does not run on the spread grass, is the only Tedder proving satisfactory after being years in use.

BELCHER & TAYLOR AGR'L TOOL CO.
BOX 120 CHICOPEE FALLS, MASS.

Whitman's Patent Americus.

The Best Cider and Wine Mill made. Will make 20 per cent. more cider than any other. Geared outside. **Perfectly Adjustable.** Prices as low as any first-class Mill. Mfrs. of Horse-Powers, Corn Shellers, Feed Cutters, Feed Mills, etc. Send for circulars.

Whitman Agricultural Co.,
ST. LOUIS, MO.

FRUIT DRYERS

PRICES GREATLY REDUCED. Send for Circular.
ZIMMERMAN M'FG CO., BURLINGTON, IOWA.

12 DOLLARS each for *New* and *Perfect* SEWING MACHINES. Warranted five years. Sent on trial if desired. Buy direct and save $15 to $35. Organs given as premiums. Write for FREE circular with 1000 testimonials from every state. GEO. PAYNE & CO., 47 3rd Ave. Chicago, Ill.

FREE KNIFE

With every **Pack** of our **NEW CARDS.** Only **15c.** for **40 CARDS**—assorted, *Fringed, Chromos, Hidden Name,* and *Plain Gilt Edge* (your name on all) and lovely **Pocket Knife.** Get a **Club** of **3** among friends, and we send **your Pack** and **Knife FREE**—that is, **4 lots for 54 cents.** ☞ *Agent's Sample Book,* 4c.

HOLLEY CARD CO., MERIDEN, CONN.

PATENTS

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PATENTS

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HENRY WISE GARNETT, Washington, D. C.

Refers to Riggs & Co., Bankers, Washington, D. C.

☞ **SEND FOR INVENTOR'S GUIDE.** ☜

TRY SAMPLE DOZEN HILL'S PATENT BAG TIES. By mail, post-paid, 30 cents
HILL MANUFACTURING CO., Wilkes Barre, Pa.

Chester White, Berkshire and Poland China **PIGS. Fine Setter Dogs, Scotch Collies, Fox Hounds and Beagles, Sheep and Poultry,** bred and for sale by W. GIBBONS & CO., West Chester, Chester Co., Pa.
Send stamp for Circular and Price List.

Warranted FOR 6 Years.

CORNISH ORGANS ONLY $45.00

$65.00 { 7 STOP } **Organs Reduced to Cost $45.00**
SHIPPED ON 10 DAYS' TEST TRIAL BEFORE PAYMENT IS REQUIRED.
STOOL, INSTRUCTION BOOK and delivery on board Cars here FREE.

NOW IS THE DULL SEASON

when most Organ factories shut down, or run half time, WE PREFER TO RUN FULL TIME and sell at about actual cost. This Organ, shown by annexed cut has never been offered or sold for less than $65.00; we will during the dull season, sell it at about what it ACTUALLY COSTS US TO BUILD, ONLY

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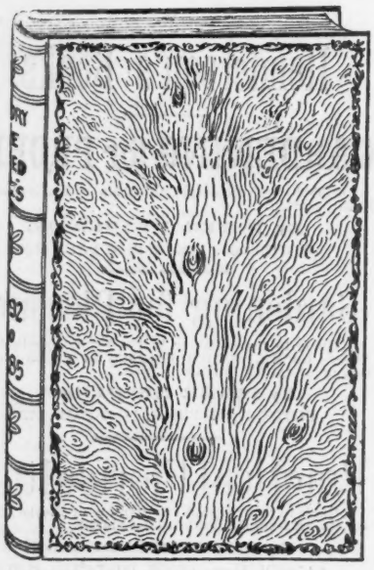

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